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ABSTRACT

Fifty standardized science tests are alphabetically listed under three major sections: (1) 23 elementary school science tests; (2) seven middle/junior high school science tests; and (3) secondary school science tests. The following information is provided for each test: test author(s), publisher, number of test forms, number of items on test, administration time, test purpose, content tested, available test scores for individual pupils and groups, target audience, copyright data, cost of specimen set, item type, norms, reliability, validity, types of reports available, and a description of other information. A listing of two science tests in braille, seven science tests in large type, eight item banks with science items (including name, contact person, and description), and addresses of test publishers are included. (SK)

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Compendium of Standardized Science Tests

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National Science Teachers Association

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Preface

Eight years ago the National Science Teachers Association published *Standardized Science Tests: A Descriptive Listing*. Since that time (1973), achievement testing has been a topic of heated conversation in a variety of settings from teachers' lounges to state legislatures. Conversations have ranged from pro to con, rational to irrational, and productive to inconclusive. At times, comments about educational testing appear to be at opposite ends of the spectrum at the same time.

In the eyes of some groups, achievement testing has been considered the way to measure the quality of public education. This belief has resulted in (1) an increase in the number and comprehensiveness of state and local testing programs, (2) the organization of public and privately sponsored conferences and committees to study such issues as the decline in test scores, (3) the establishment of minimum competency testing programs, and (4) a resurgence of emphasis on educational accountability with student testing and perhaps teacher testing as a major component.

At the same time, opponents of testing began to speak out. Evidence of the opposition may be represented by (1) the call for moratoriums on standardized tests by some educational organizations, (2) position statements condemning certain forms of achievement testing, (3) a barrage of criticism aimed at test publishers, and (4) an increase of legislation proposed to protect the test consumer.

Where does this uproar leave the science teacher, program evaluator, researcher, and school administrator? Consider the following position:

> Our students are entitled to the best educational programs our resources can provide. Some mechanism should be employed to determine if we have attained this goal or if some changes and improvements are necessary to upgrade instructional programs. Testing offers to assist us in this endeavor. It is, however, one of the means to an end—not the end itself.

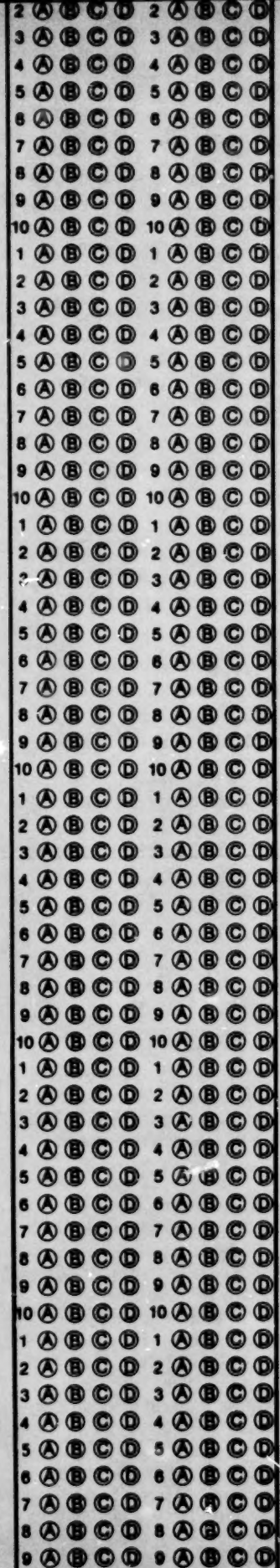
Should you accept the basic premise that testing is a valuable educational tool, information in this publication will be quite useful, as it provides you, the science teacher, with a descriptive listing of a variety of testing tools and some selected characteristics of these tools.

Though it is doubtful that the perfect test can ever be developed, good tests do exist and are available to those electing the avenue of testing to help determine pupil achievement, goal attainment, or program worth. *Compendium of Standardized Science Tests* can be a starting point in the search for the best test or tests for a particular combination of circumstances. It contains information on all known published standardized science tests. There are sections on Tests in Braille, Science Tests in Large Type, and Item Banks. No test material is endorsed, as an endorsement can come only from the test user who has studied a test's characteristics and found it to be the best for a specific purpose.

This book is organized to help you survey the available testing tools applicable to your target audience, and then to help you specify which of these tests will best meet your particular needs. The tests are classified first by grade level—elementary, middle/junior high school and secondary—and then listed alphabetically by title. The test descriptions within each listing will help you determine which test best fulfills your unique requirements in terms of such variables as content, item type, reliability and validity, norming methodology, and report generation. Even with all this information, however, you will likely want to examine the tests themselves before finalizing your selection. This book can assist in limiting the number of specimen sets you request from the test publishers.

I would like to express my appreciation to the National Science Teachers Association for publishing this long-needed revision of the earlier book, and to Ellie Snyder and Jennifer Knerr, at NSTA, who edited the final manuscript.

–J.W.



To those persons of untold assistance and encouragement to me over the years

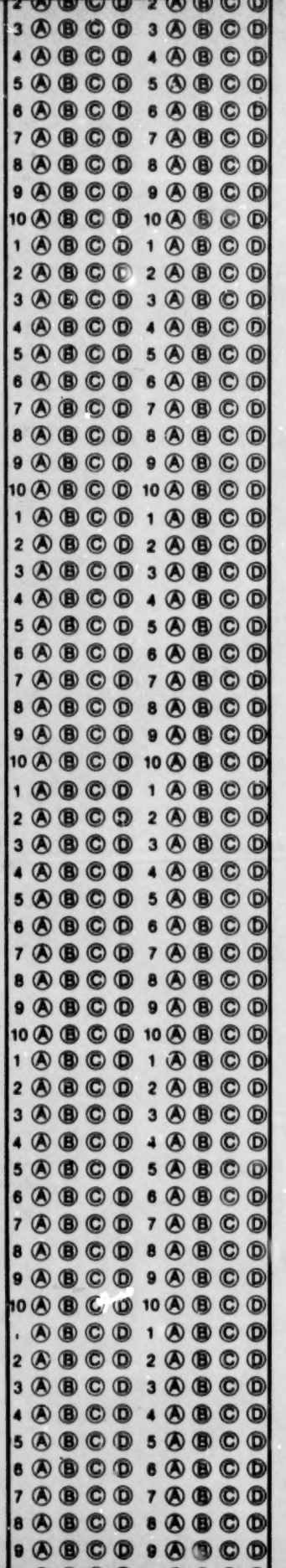
*William B. Keene

*George McGorman

*Josephine Simpson

*Lee R. Summerlin

*W. C. Van Deventer



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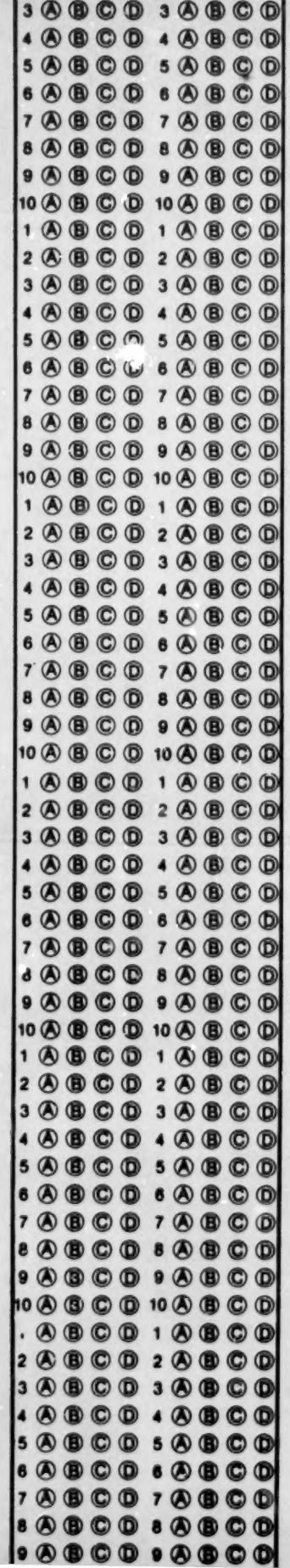

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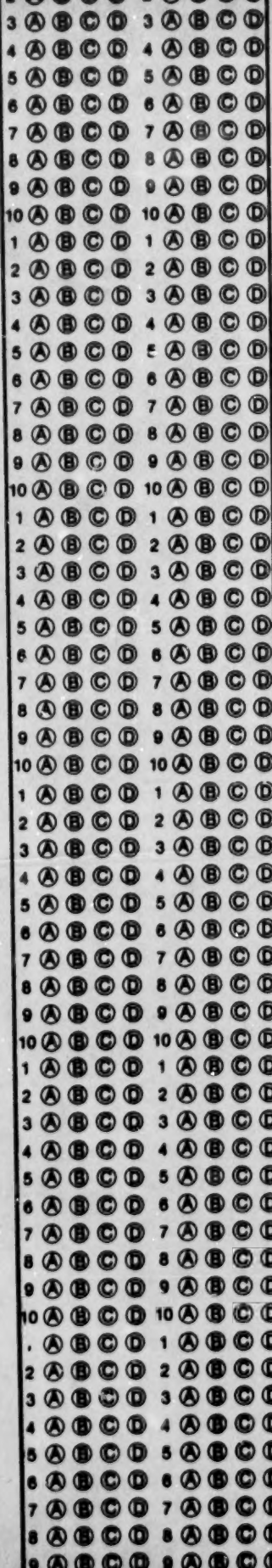

Elementary School Science Tests

Borman-Sanders Elementary Science Test

Test I and Test II

Test Author(s)	Ira Borman and M.W. Sanders
Publisher	Bureau of Educational Measurements, Emporia State University
Number of Test Forms	2 forms for each test—A and B
Number of Items on Test	100 items on each test and test form
Administration Time	40 minutes
Test Purpose	The test can be used to (1) assess student achievement, (2) check the efficiency of instruction, (3) assign school marks, (4) analyze student and group weaknesses, and (5) motivate student effort.
Content Tested	The test is intended to cover basic physical and life science knowledge.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, Percentile
Groups	Raw Scores, Percent Correct
Target Audience	Students in grades 5-8
Copyright Date	1964 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available; cost not specified
Item Type	4 alternative multiple choice and matching
Norms	Nearly 16,500 student scores were used in the norming. These student scores were distributed across tests, test forms, and grade levels. Students in the sample participated in the Every Pupil Scholarship testing programs during the 1961-62 and 1962-63 school years. No information was provided on the representativeness of the norming sample.
Reliability	Depends on test, test form, and grade level; ranges from .88 to .91 using the Kuder-Richardson Formula 21.
Validity	Test content was based upon the content of textbooks and courses of study. Tests were reviewed by science teachers.
Types of Reports	No special raports are provided since the tests are hand scored by the teacher. A scoring key is provided.
Other Information	Minimal interpretive and technical information is available.

CIRCUS Level A: Do You Know?

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	32
Administration Time	Untimed; about 30 minutes
Test Purpose	The test can be used to differentiate the capacities of children and identify potential for academic progress. The test could be used to evaluate the effectiveness of programs, place pupils for instruction, and assist in curriculum decision-making.
Content Tested	Measures a child's general knowledge of facts including the areas of health and safety and physical environment.
Available Test Scores	
Individual Pupil	Raw Scores (Domain Scores), Percent Correct, National Percentile Rank, Expanded Scale Scores, Grade Level Indicators, Percentile Bands, and Standard Scores
Groups	Raw Scores, Percent Correct, Standard Scores, Grade Level Indicators, Expanded Scale Scores, Performance on Objectives
Target Audience	Students in nursery school to beginning kindergarten
Copyright Date	1976 (Date of Next Revision: 1986)
Cost of Specimen Set	Samples will be provided for small scale requests.
Item Type	3 alternative multiple choice
Norms	Midpoints of the norm dates are January 15 for pre-K and October 15 for kindergarten. Norms were gathered on children aged 4 and 5 attending preprimary education centers for regular English speaking children. Norms were based upon test administration to 563 kindergarten and 286 nursery school children. Schools participating in the norming included both boys and girls from all geographic regions of the country, various socioeconomic groups, private and public school sponsors, different racial and ethnic backgrounds, and a range of city sizes.
Reliability	.79 for nursery school and .77 for kindergarten, using the Alpha coefficient
Validity	Tests were written to reflect content typically taught in schools at the pre-K and kindergarten levels. The user should examine the test to determine if it assesses the curriculum of that specific situation.
Types of Reports	In addition to reports that contain the typical test scores, the publisher provides reports about an individual pupil in sentence or verbal format. Sentences are coded to the raw scores pupils obtain. Reports on individuals and groups of students are provided.
Other Information	The publishers offer a local hand scoring capability or a machine scoring option. Practice tests are available for use with students prior to testing. Editorial and statistical methods were used to eliminate any test bias due to sex, race, or ethnic background, and circus animals are used in the items in an effort to minimize such bias. This subtest is part of a battery of tests which measure such areas as verbal skills, quantitative abilities, consumer behavior, music, and literature. The test battery has accompanying materials including a manual and technical report and a user's guide. Follow-up activities related to the domains tested can be obtained from the publisher.

CIRCUS Level B: Do You Know?

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	24
Administration Time	Untimed; about 30 minutes
Test Purpose	To measure a child's general knowledge of facts. The test may be used for evaluating programs, grouping students for instruction, and making curricular decisions.
Content Tested	Environmental understanding, the community, measurement, physical science
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives
Target Audience	Students in grades K.5-1.5
Copyright Date	1976 (Date of Next Revision: 1985)
Cost of Specimen Set	Small scale requests will be honored.
Item Type	4 alternative multiple choice; the test is read to the student
Norms	Nearly 2000 students from regular private and public schools formulated the norming sample. Students originated from various parts of the country, and represented varying socioeconomic status levels and racial, sex, and ethnic groups. Special education students were excluded from the sample. Midpoints of the norming dates are October 15 and May 15.
Reliability	.75 using the Alpha coefficient
Validity	Test items were developed to measure typical test content taught at the K-1 levels in an effort to establish content validity. This test correlates highly with both verbal and general ability measures as well as teacher judgement about an individual pupil's ability.
Types of Reports	In addition to displays of numerical representations of pupil performance, the publisher has established the capability to produce sentence or verbal reports of student outcome. This capability is provided through raw score to sentence conversion tables.
Other Information	This test is part of a battery of tests for this age level. The publisher provides both machine and hand scoring capabilities. Practice tests accompany this test battery. The publisher provides various manuals which include directions for administering the test, suggestions for interpreting test scores, descriptions of the test, validity procedures, and follow-up instructional activities. Test items were reviewed editorially and statistically in an attempt to alleviate racial, sex, and ethnic bias, and circus animals are used in the items in an effort to minimize such bias.

CIRCUS Level C: Do You Know?

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	36
Administration Time	Untimed; about 30 minutes
Test Purpose	The test may be used for grouping students for instruction and identifying strengths and weaknesses of a curriculum program. The test can be used to assess, in part, related knowledge of general information.
Content Tested	Environmental understanding, the community, measurement, physical science, and culture
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Verbal or Sentence Descriptions of Pupil Performance, Standard Scores, Percentile Bands, Stanines
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives, Standard Scores
Target Audience	Students in grades 1.5-2.5
Copyright Date	1979 (Date of Next Revision: 1985)
Cost of Specimen Set	Available at no cost for small scale requests
Item Type	4 alternative multiple choice; items read to students
Norms	Midpoints of the empirical norming dates are October 15 for grade 2 students and May 10 for grade 1 students. Approximately 5800 grade 1 and 4600 grade 2 students comprised the norming sample. To ensure a representative norming sample, portions of the sample were allocated to three separate categories including 10 percent to Catholic and parochial schools, 13 percent to large city schools and 77 percent to all other types of school districts. Data were weighted to reflect the nation on other factors.
Reliability	.82 for grade 1; .84 for grade 2 using Kuder-Richardson Formula 20
Validity	Content validity was established through writing test specifications and items related to current educational practices and curriculum materials. Scores on this test are related to listening and reasoning abilities. Test scores are also related to teacher judgements about a child's ability. Scores on this test are fairly predictive of future student performance.
Types of Reports	The test can provide both numerical and verbal descriptions of student performance. This can be accomplished through both the hand and machine scoring capabilities provided by the publisher.
Other Information	This test is part of a battery of tests which can be used at this grade level. A practice test is encouraged for use with students prior to the test administration. Test items were reviewed both editorially and statistically for racial, sex, and ethnic bias, and circus animals are used in the items in an effort to minimize such bias. Special education students and non-English speaking students were excluded from the norms. Manuals accompanying the test include test descriptions, norming procedures, technical definitions, and excellent descriptions on using the test scores for a variety of instructional and curricular decisions.

CIRCUS Level D: Do You Know?

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	36
Administration Time	Untimed; about 30 minutes
Test Purpose	The test can help the teacher identify individual pupil strengths and weaknesses for instructional grouping. Test data may also be used for evaluating curricular programs.
Content Tested	Environmental understanding, the community, measurement and physical science, culture
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Verbal or Sentence Performance Descriptions, Stanines, Standard Scores
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives, Standard Scores
Target Audience	Students in grades 2.5-3.5
Copyright Date	1979 (Date of Next Revision: 1985)
Cost of Specimen Set	Small scale requests will be honored.
Item Type	4 alternative multiple choice; items read to students
Norms	Approximately 3500 grade 2 students and 5300 grade 3 students comprised the norming sample for this test. Grade 3 students were tested in the fall with October 15 the midpoint of the empirical norming period. Grade 2 students were tested in the spring with an empirical midpoint of May 10. Students in the sample seem to be nationally representative with factors such as race, sex, ethnic background, urbanicity, and socioeconomic status being considered.
Reliability	.79 for grade 2; .80 for grade 3 using Kuder-Richardson Formula 20.
Validity	The types of test items written for this test were based upon a survey of educational practices and curriculum materials. Scores on this test appear to relate to a general ability factor and to listening and reasoning ability. Scores relate to teacher perceptions of student ability and seem to be predictive of short term future achievement.
Types of Reports	Individual and group reports are available from the publisher's machine scoring capability and also from the hand scoring option. Verbal or sentence descriptions are provided through conversion tables.
Other Information	This is one of a battery of tests for this grade level. Practice tests are made available and encouraged for use by the test publisher. Students who did not speak English as their first language were excluded from the norms. Manuals are made available to the user and include descriptions of the test, definitions of measurement terms, information on test administration, some technical information, and a good section on how test data can be interpreted and used. A procedure for developing local norms is also given. Circus animals are used in the items in an effort to reduce racial, sex, and ethnic bias. Items are also reviewed statistically.

CIRCUS Level A: Think It Through

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	32
Administration Time	Untimed; about 30 minutes
Test Purpose	To measure a child's ability to identify problems, classify, evaluate solutions, and identify usual sequences of events or activities. The test might be used for program evaluation, curriculum analysis, or grouping students for instruction.
Content Tested	Classification, solution evaluation, time sequence
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Sentence Descriptions
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives
Target Audience	Pre-kindergarten to kindergarten-age children
Copyright Date	1976 (Date of Next Revision: 1985)
Cost of Specimen Set	Small scale requests will be honored
Item Type	3 or 4 alternative multiple choice
Norms	Empirical midpoints of the norming dates are January 15 for pre-kindergarten and October 15 for kindergarten. The norms were based on 273 nursery school students and 600 kindergarten students. Pupils formulating the norming sample were boys and girls who lived in various geographical regions of the country, attended private and public schools, were of various racial, ethnic, and socioeconomic backgrounds, and came from large cities and small towns.
Reliability	.82 for nursery school; .81 for kindergarten using the Alpha coefficient
Validity	Content validity was established by constructing test items to measure skills typically taught at nursery school and kindergarten levels. Performance on this test correlated highly with teacher judgement about the ability of individual pupils.
Types of Reports	In addition to reports containing numerical representations of student performance in comparison to a norm group, this testing program offers the capability of translating the numerical scores into sentence or verbal interpretations of a student's test performance.
Other Information	This is one of a battery of tests designed for nursery school and kindergarten pupils. Tests may be machine or hand scored. Test items were reviewed editorially and statistically with the intent of alleviating racial, ethnic, and sex bias. A circus animal theme is used in the test items. A variety of manuals accompany the test and provide administration directions, interpretation of test scores, descriptions of the test, conversions from raw scores to sentence descriptions, and follow-up instructional activities. Practice tests are available for student use.

CIRCUS Level B: Think It Through

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	31
Administration Time	Untimed; about 30 minutes
Test Purpose	To determine the child's ability to discriminate relevant from irrelevant factors, evaluate solutions to problems, identify and extend pattern sequences, and discriminate among features of an object. The test may be used for grouping students for instruction, evaluating curricular programs, and identifying strengths and weaknesses in a school's curriculum.
Content Tested	Word problems, patterns, sequences, mazes
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives
Target Audience	Students in grades K.5-1.5
Copyright Date	1976 (Date of Next Revision: 1985)
Cost of Specimen Set	Available at no cost for small scale requests
Item Type	4 alternative multiple choice; items read to students
Norms	Midpoints of empirical norming dates are October 15 and May 15. Students formulating the norming sample excluded special education students. Other students were selected based on 17 factors including race, sex, ethnic background, socioeconomic status, public and private school affiliation, and geographic region. Each factor was weighted to assure that the sample was representative of the nation.
Reliability	.65 for Word Problems; .75 for Patterns; and .84 for Mazes using the Alpha coefficient
Validity	Group results on this test appear to be related to a general ability factor and problem solving ability. The Patterns and Mazes subscales seem to relate to visual and spatial perception. Test items were developed to assess skills common to school programs at the target age for this test.
Types of Reports	Both numerical and verbal scores can be provided from this test. Reports contain sentences which verbally describe student performance. For those opting to hand score, raw score to sentence conversions are listed in a manual.
Other Information	Both machine and hand-scoring capabilities are provided for this test. Prior to test administration, the user is encouraged to administer the available practice test items. The publisher provides manuals which include directions for administering the test, suggestions for interpreting and using the test results, norming procedures, techniques used to determine validity, and follow-up instructional activities. Test items were reviewed for bias both editorially and statistically. A circus theme is used in the test items. The test can be included as part of the complete battery of tests for this grade level.

CIRCUS Level C: Think It Through

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test Forms	1 form
Number of Items on Test	33
Administration Time	Untimed; about 30 minutes
Test Purpose	This test is intended to measure problem solving ability. It may be used to identify both individual and group strengths or weaknesses. Curriculum and instructional decisions can be enhanced through the use of the test data.
Content Tested	Discrimination among the features of objects, following and extending pattern sequences, differences among designs
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Verbal or Sentence Descriptions of Pupil Performance, Standard Scores, Stanines, Percentile Bands, Performance on Objectives
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives, Standard Scores
Target Audience	Students in grades 1.5-2.5
Copyright Date	1979 (Date of Next Revision: 1985)
Cost of Specimen Set	Samples will be provided at no cost for small scale requests.
Item Type	4 alternative multiple choice; items read to students
Norms	Both special education students not in regular classes and non-English speaking students were excluded from the norming sample. Midpoints of the norming dates are October 15 (grade 2) and May 10 (grade 1). Approximately 5800 grade 1 students and 4600 grade 2 students comprised the norming sample for this test. Students for the norming sample were from public and private schools, towns of varying sizes, various geographic regions, and differing socioeconomic status.
Reliability	.82 for grade 1; .84 for grade 2 using Kuder-Richardson Formula 20
Validity	Based on a survey of educational practices and curriculum materials, test authors wrote test specifications and constructed items to meet those specifications. Test results are related to teacher judgement about a student's ability and also appear to predict future achievement. Scores on this test relate to general ability.
Types of Reports	Both numerical scores and verbal descriptions of student performance are available from the machine and local hand-scoring options. Reports for individuals and groups are obtainable.
Other Information	Test items were reviewed both editorially and statistically for the alleviation of racial, ethnic, and sexual bias. A circus theme is used in the test items. Manuals accompany the test and provide directions for test administration, a description of the test, definition of commonly used measurement terms, descriptions of test scores and norming procedures, and an excellent description of interpreting and using the test data. Practice test items and follow-up activities associated with the test are available from the publisher.

CIRCUS Level D: Think It Through

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	33
Administration Time	Untimed; about 30 minutes
Test Purpose	This test may be used to identify individual and group strengths and weaknesses for instructional and curricular decision-making. Programs may also be evaluated or compared using this test as a tool.
Content Tested	Word problems, patterns and sequences, mazes
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Verbal or Sentence Descriptions of Student Performance, Stanines, Standard Scores
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives, Standard Scores
Target Audience	Students in grades 2.5-3.5
Copyright Date	1979 (Date of Revision: 1985)
Cost of Specimen Set	Available at no cost for small scale requests
Item Type	4 alternative multiple choice; items read to students
Norms	About 3500 grade 2 students were tested in the spring and 5300 grade 3 students were tested in the fall in order to develop the norming sample for this test. Midpoints of the empirical norming periods are October 15 and May 10. Factors considered in selecting the norming sample included race, sex, ethnic background, size of towns, public or private school affiliation, socioeconomic status, and geography.
Reliability	.79 for grade 2; .80 for grade 3 using Kuder-Richardson Formula 20
Validity	Test items were written to reflect current educational practice and curriculum materials. Scores on this test seem to predict short term achievement status and are related to teacher judgements about student ability. Student results on this test correlate with a general ability factor as well as listening and reasoning abilities.
Types of Reports	Individual pupil and group reports are available from both the machine scoring and hand scoring options on this test. Verbal descriptions of pupil performance can be generated from the numerical data.
Other Information	Practice test items are provided by the publisher. Manuals describing the test, defining terms, containing technical information and describing the interpretation and uses of various test scores accompany the test. Only students in regular classrooms are included in the norming sample. Test items were reviewed editorially and statistically for racial, sex, and ethnic bias. A circus theme is used in the test items. Non-English speaking students were excluded from norms.

Comprehensive Test of Basic Skills

Level C, Form S—Science

Test Author(s)	CTB/McGraw-Hill
Publisher	CTB/McGraw-Hill
Number of Test Forms	1 form—Form S
Number of Items on Test	30
Administration Time	Approximately 35-40 minutes; items are read to students.
Test Purpose	To measure the extent to which students have developed the capabilities and learned the skills that are prerequisite to studying and learning in subject matter courses. Results may be used for making curricular and instructional decisions and reporting student achievement status to parents, teachers, etc.
Content Tested	Chemistry, Physics, Earth Science, Ecology, Zoology, Botany, General Science. Items are coded to the processes of recognition, classification, quantification, and interpretation of data.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Grade Equivalent, Stanines, Expanded Scale Scores, Anticipated Achievement Scores (when test is used in combination with the Short Form of Academic Aptitude), Performance on Items
Groups	Raw Scores, Grade Equivalent, Expanded Scale Scores, Anticipated Achievement Scores, Item Analysis
Target Audience	Students in grades 1.6-2.9
Copyright Date	1973 (Date of Next Revision: 1981)
Cost of Specimen Set	$5.90
Item Type	4 alternative multiple choice; machine scorable booklets
Norms	Approximately 4700 grade 1 students and 4100 grade 2 students comprised the norming sample for this test in April, 1973. Schools participating in the standardization were selected based upon geographic region, public or private school affiliation, size of towns, size of school districts, and socioeconomic status. Participating schools completed an extensive questionnaire. Summary data from the questionnaire helps to further describe the norming sample.
Reliability	.79 for grade 1 and .82 for grade 2, using Kuder-Richardson Formula 20
Validity	Content validity was established by developing test specifications that related to typical curricular content as determined through surveys and teacher suggestions. As a result the test emphasizes problem-solving rather than recall skills. Prior to inclusion in the final form of the test, test items were reviewed for potential bias by black, Spanish-speaking, and Oriental teachers, curriculum experts, and specialists in education of minority students.
Types of Reports	The publisher offers an individual student report listing test scores, percentile bands, and item level information by science process category. In addition, a group report listing item level performance for each student by skill area can be provided. Other reports include an item analysis listing percent correct by item; frequency distribution by grade equivalent, expanded scale scores, stanines, or raw scores; and gummed labels with individual pupil summary data.
Other Information	The science test may be used as part of a battery of tests which include reading, mathematics, language arts, and social studies. Practice tests are available for use. Hand scoring and machine scoring capabilities are offered. Materials associated with the test include an administration manual, two technical reports, a coordinator's handbook, and a teacher's guide. The test battery may be used with the Short Form of Academic Aptitude. Item responses for this test are in the form of pictures; students are not required to read responses.

Comprehensive Test of Basic Skills

Level 1, Science

Test Author(s)	CTB/McGraw-Hill
Publisher	CTB/McGraw-Hill
Number of Test Forms	2 forms—S and T
Number of Items on Test	37
Administration Time	40 minutes
Test Purpose	Results from this test can be used to determine strengths and weaknesses in science content and process for both individuals and programs.
Content Tested	Form S includes Chemistry, Physics, Earth Science, Ecology, Botany, Zoology, and General Science items, which are coded to processes including recognition, classification, quantification, data interpretation, prediction from data, hypothesis evaluation, and design analysis.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Grade Equivalent, Stanines, Expanded Scale Scores, Anticipated Achievements Scores (when used with the Short Form of Academic Aptitude), Performance on Items
Groups	Raw Scores, Grade Equivalent, Expanded Scale Scores, Anticipated Achievement Scores, Item Analysis
Target Audience	Students in grades 2.5–4.9
Copyright Date	1973 (S); 1975 (T) (Date of Next Revision: 1981)
Cost of Specimen Set	$5.90
Item Type	4 alternative multiple choice; machine scorable booklet
Norms	About 4400 grade 2 students, 8000 grade 3 students, and 4100 grade 4 students were tested in April. These students comprised the norming sample. Students originated from various parts of the country, socioeconomic levels, racial and ethnic backgrounds, towns of varying size, and public and private school affiliations. A survey completed by schools in the norming sample further describes the sample and can be found in the technical reports. Only spring norms are available.
Reliability	.82 for grade 2; .87 for grade 3; and .88 for grade 4 using Kuder-Richardson Formula 20
Validity	The specifications for this test were developed subsequent to the analysis of a survey which aided in outlining typical science content, educational practices, and curriculum materials. The survey was completed by instructional practitioners and curriculum specialists. Items were also reviewed by persons with expertise in ethnic and minority education prior to development of final forms in an effort to reduce bias.
Types of Reports	The publisher offers an individual student report which lists test scores, percentile bands, and item level information by science process category. In addition, a group report listing item level performance for each student by skill area can be provided. Other reports include an item analysis listing percent correct by item; frequency distributions by grade equivalent, expanded scale scores, stanines, or raw scores; and gummed labels with individual pupil summary data.
Other Information	The test is part of a battery of basic skills tests. Practice tests and a machine scorable booklet can be provided to the user. The test, however, has a hand scoring capability. Test content appears to contain an emphasis on higher level science processes and includes a variety of pictures and diagrams which are required for students to answer the questions posed. An Examiner's Manual, two technical reports, a coordinator's handbook, and a Teacher's Guide accompany the test.

Comprehensive Test of Basic Skills

Level 2, Science

Test Author(s)	CTB/McGraw-Hill
Publisher	CTB/McGraw-Hill
Number of Test Forms	2 forms—S and T
Number of Items on Test	36
Administration Time	40 minutes
Test Purpose	Results from this test can be used to determine strengths and weaknesses in science for both individuals and groups by content area and science process.
Content Tested	Form S includes items in Chemistry, Physics, Earth Science, Ecology, Botany, Zoology, and General Science. Items are coded to processes including recognition, classification, quantification, data interpretation, prediction from data, hypothesis evaluation, and design analysis.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Grade Equivalent, Stanines, Expanded Scale Scores, Anticipated Achievement Scores (when used in combination with the Short Form of Academic Aptitude), Performance on Items
Groups	Raw Scores, Grade Equivalent, Expanded Scale Scores, Anticipated Achievement Scores
Target Audience	Students in grades 4.5-6.9
Copyright Date	1973 (S): 1975 (T) (Date of Next Revision:1981)
Cost of Specimen Set	$5.90
Item Type	4 alternative multiple choice
Norms	About 3700 grade 4 students, 9000 grade 5 students, and 5100 grade 6 students participated in the norming of the test in the spring of 1973. Schools in the sample were selected based upon factors such as urbanicity, geographic distribution, and public or private school affiliation. Represented within this sample are differing minority and ethnic groups and socioeconomic levels.
Reliability	.79 for grade 4; .83 for grade 5; .86 for grade 6 using Kuder-Richardson Formula 20
Validity	The content specifications for this test were derived from a survey of science instructional practices, curriculum materials, and teacher suggestions. An effort was made to develop both forms of the test around the same content and process specifications. Prior to developing the final form of the test, items were reviewed by minority and ethnic education specialists to reduce bias.
Types of Reports	The publisher offers an individual student report which lists test scores, percentile bands, and item level information by science process category. In addition, a group report listing item level performance for each student by skill area can be provided. Other reports include an item analysis listing percent correct by item; frequency distributions by grade equivalent, expanded scale scores, stanines, or raw scores; and gummed labels with individual pupil summary data.
Other Information	The test offers both a machine and hand scoring capability. The test items are read by the student and answers are placed on a separate answer sheet. Compared to lower levels of the CTBS science tests, there are fewer diagrams and pictures in this test. A practice item is provided to aid the student in completing the test questions. Directions for administering the test, interpreting the test scores, planning the test administration, as well as follow-up instructional activities may be found in documents accompanying the test.

Educational Development Series

Elementary Level Science

Test Author(s)	George and Jacqueline Mallinson
Publisher	Scholastic Testing Service, Inc.
Number of Test Forms	5 forms—B, C, R, S, and T
Number of Items on Test	50
Administration Time	25 minutes
Test Purpose	The publisher indicates the following purposes: (1) to compare student motivation and interests with actual achievement scores, and (2) to describe student achievement in comparison to the national sample and to other content areas.
Content Tested	Health and Safety, 6 items; Biological Science, 6 items; Earth Sciences, 6 items; Physical Sciences, 12 items; simple machines, 6 items; maps, graphs and charts, 14 items
Available Test Scores	
Individual Pupil	National Percentile, Raw Scores, Grade Scores, Expanded Scale Scores, Normal Curve Equivalent
Groups	Percent Correct by Item, Raw Scores, Grade Scores, Expanded Scale Scores, Normal Curve Equivalent
Target Audience	Students in grades 4-6
Copyright Date	1978 (Date of Next Revision: 1982)
Cost of Specimen Set	$2
Item Type	5 alternative multiple choice; some modified true and false
Norms	Norms for this test were developed through the administration of one of the five forms of the test to a group of students at each of the three applicable grade levels. Norms were gathered over the 1974-75 and 1975-76 school years. Based on such factors as rural-urban distribution, public and private school affiliation, and geographic location, the national sample for this test resembles the national population as reported in *Statistical Abstract of the United States-1975*. Fall and spring norms are provided.
Reliability	.74 to .91 depending upon grade level and test form, using Kuder-Richardson Formula 21
Validity	The publisher suggests a thorough test review by the user in order to establish content validity. The publisher has correlated one or more of the forms of this test with the Ohio Survey Tests, Iowa Test of Basic Skills, Sequential Tests of Educational Progress, and teacher grades in several content areas. Though sample sizes are small, the science test appears to correlate with other achievement areas in a relatively strong positive manner.
Types of Reports	Individual pupil label, group record of results by class, group summary by grade level for school or school district, individual item report, and a group item report can be provided.
Other Information	This test is part of a battery of measures covering career interests, school plans, favorite school subjects, nonverbal ability, verbal ability, reading, English, mathematics, social studies, and career planning. The test package includes a teacher's manual of directions. Information on a review for racial, sex, or ethnic bias is not provided in the technical report. Items appear to concentrate on factual recall in the area of science. The test uses a booklet and student answer sheet.

Iowa Test of Basic Skills

Science Multilevel Edition

Test Author(s)	A.N. Hieronymus, E.F. Lindquist, H.D. Hoover
Publisher	Riverside Publishing Company
Number of Test Forms	1 form—Form 7, with 6 levels in the test booklet
Number of Items on Test	115 (38-44 items per subtest per level)
Administration Time	35 minutes per test level
Test Purpose	To identify student achievement status in comparison to a national norm and to track student progress across time in school.
Content Tested	Nature of Science, Life Science, Earth and Space Science, Physics, Chemistry, and Health and Safety; through the process areas of knowledge, application, explanation, and generalization
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Grade Equivalent, Expanded Scale Scores, Performance on Objectives, Standard Scores, Normal Curve Equivalent, Age Equivalent, Age Equivalent Percentile Rank
Groups	Raw Scores, Percent Correct, Grade Equivalent, Expanded Scale Scores, Performance on Objectives, Standard Scores, Normal Curve Equivalent, Age Equivalent
Target Audience	Students in grades 3-8
Copyright Date	1978 (Date of Next Revision: 1983)
Cost of Specimen Set	Not reported
Item Type	4 alternative multiple choice
Norms	10,947 students comprised the norming sample for this test. School districts were a subsample of the ITBS multi-level national standardization sample and were selected based on size of enrollment, geographic region, and community socioeconomic status. After testing, the samples were weighted to resemble the national population. The racial and ethnic makeup were checked and results weighted to reflect the characteristics reported in *Directory of Public Elementary and Secondary Schools in Selected Districts, Enrollment and Staff by Racial/Ethnic Group, Fall 1972.*
Reliability	Ranges from .86 to .87 using Kuder-Richardson Formula 20
Validity	Test items were written to reflect the content and processes taught to students at the applicable grade levels. This was performed after item writing teams studied curriculum guides, textbooks, professional literature, and research studies. After item tryouts and a series of reviews, items were selected by test authors to assure an appropriate balance within skills categories. Scores on this test were correlated with the Test of Academic Proficiency and Tests of Academic Progress. Correlations are relatively high and positive.
Types of Reports	A variety of reports and scoring services are available to the user. These include a listing of student performance by skill area, a narrative report of student performance compared with local or national norms, group performance by skill area, a group narrative summary, group averages by grade equivalent and stanines, student labels, alphabetical listings by grade and homeroom, student rankings, and many others.

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Iowa Test of Basic Skills

Science Multilevel Edition, continued

Other Information

This test is part of a battery in the basic skills. The method of test construction allows the teacher to measure student achievement in a somewhat individualized manner. Depending upon student ability, students may be assigned one of six starting and ending points within the comprehensive test. Thus, the test provides for in-level and out-of-level testing and the ability to convert out-of-level scores to in-level scores. This approach may reduce student frustration in taking the test. A manual with comprehensive suggestions for improving both curriculum and instruction accompanies this test package. Items have undergone editorial and statistical review to alleviate racial, sex, and ethnic bias.

Metropolitan Achievement Test: Survey Science Test (5th Edition)

Primary I

Test Author(s)	George Prescott, Irving Balow, Thomas Hogan, Roger Farr
Publisher	The Psychological Corporation
Number of Test Forms	2 Forms—JS and KS
Number of Items on Test	34
Administration Time	10 minutes for directions and preparation; about 25 minutes for actual test administration
Test Purpose	To help a teacher gather data on individual student strengths and weaknesses in science and also to provide summary information on pupil achievement for curriculum planning.
Content Tested	The test content covers Physical Science (12 items), Earth Science (8 items) and Life Science (14 items). Items are also classified by behaviors including knowledge (16 items), comprehension (11 items), inquiry skills (5 items) and critical analysis (2 items).
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Item Performance, Stanines, Performance by Content Cluster, Performance by Behavioral Classification, Local Norms
Groups	Raw Scores, Percent Correct by Item, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Group Stanines for Buildings and Systems, Number of Students At or Above the Median for Each Objective and Cluster, Local Norms
Target Audience	Students in grades 1.5-2.4
Copyright Date	1978 (Date of Next Revision: 1985)
Cost of Specimen Set	$4.55
Item Type	3 alternative multiple choice; items are read to the student
Norms	Both test forms were empirically normed in the fall and spring of the same school year. Empirical midpoints for the norms are October 15 and April 20. The number of students on which the norms for this test were based include 3687 (grade 1, form JS), 3976 (grade 1, form KS), 5286 (grade 2, form JS) and 5677 (grade 2, form KS). About 70 percent of the pupils took the test in the fall and again in the spring so that estimates of expected growth could be obtained. The standardization sample included public and nonpublic students, a geographic spread of pupils, ethnic representation, and varying parent income and educational levels.
Reliability	.74 using Kuder-Richardson Formula 20
Validity	To the extent possible, the test was designed to reflect a broad range of content and skills in science at this level. Before any judgements are made about individuals or the curriculum from this test, the user should carefully examine the test items to determine the curriculum match.
Types of Reports	Individual pupil level reports with norm-referenced scores or cluster scores; class summaries, school summaries, class lists with norm-referenced or cluster information, item analyses, individual pupil labels, graphic summaries, ranked lists, predicted achievement reports, magnetic tapes, punched cards, system summaries, and pre/post reports can be provided.

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Metropolitan Achievement Test: Survey Science Test (5th Edition)

Primary 1, continued

Other Information

The science survey is part of a basic skills test battery. At this level both hand scoring and machine scoring capabilities are provided. Practice tests are available. The accompanying teacher's manual describes the test development, gives directions for administering the tests, suggests ways in which data can be interpreted, and provides norms tables. The test has undergone a review for racial and ethnic bias with the publisher providing two reports which describe the procedures. Other supplementary reports include information on content development, instructional objectives, item analysis procedures, and teacher test ratings.

Metropolitan Achievement Test: Survey Science Test (5th Edition)

Primary 2

Test Author(s)	George Prescott, Irving Balow, Thomas Hogan, Roger Farr
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—JS and KS
Number of Items on Test	40
Administration Time	10 minutes for preparation and directions; approximately 30 minutes for test administration
Test Purpose	The test is designed to gather information on pupil strengths and weaknesses in science or for analyzing the school's science curriculum.
Content Tested	Test content covers the Physical Sciences (17 items), Earth Science (10 items), and Life Sciences (13 items). Test items are also coded by behaviors including knowledge (14 items), comprehension (11 items), inquiry skills (9 items) and critical analysis (6 items).
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Item Performance, Stanines, Performance by Content Cluster, Performance by Behavioral Classification, Local Norms
Groups	Raw Scores, Percent Correct by Item, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Group Stanines for Buildings and Systems, Number of Students At or Above the Median for Each Objective and Cluster, Local Norms
Target Audience	Students in grades 2.5-3.4
Copyright Date	1978 (Date of Next Revision: 1985)
Cost of Specimen Set	$4.45
Item Type	3 alternative multiple choice; items read to the student
Norms	October 15 and April 20 are the midpoints of the empirical norming periods for this test. Approximately 75 percent of the students in the standardization sample took the test in the fall and the spring so that school year achievement growth projections can be made. Norms are based on 4281 students (grade 2-form JS), 3961 students (grade 2-form KS), 5655 students (grade 3-form JS), and 5432 (grade 3-form KS).
Reliability	.71 using the Kuder-Richardson Formula 20
Validity	The user is encouraged to review the test in order to compare the match between test items and the curriculum. The test, however, was designed to reflect the typical science curriculum at this level.
Types of Reports	Individual pupil level reports with norm-referenced scores or cluster scores, class or system summaries, class lists with cluster or norm-referenced data, school summaries, item analyses, individual pupil labels, graphic summaries, ranked lists, predicted achievement reports, magnetic tapes, punched cards, and pre/post reports can be provided.
Other Information	Machine and hand scoring capabilities are provided for this test. In addition, a practice test is provided for students. The science test is part of a basic skills test battery which also includes reading, mathematics, language, and social studies. Items have been reviewed in an attempt to alleviate racial, ethnic, and sex bias. Procedures for bias review are presented in available special reports. A teacher's manual offers a description of the test development procedures, directions for test administration, a description of test scores and computer reports, suggestions for score interpretation, and norms and score conversion tables.

Metropolitan Achievement Test: Science Test (5th Edition)

Elementary Level

Test Author(s)	George Prescott, Irving Balow, Thomas Hogan, Roger Farr
Publisher	The Psychological Corporation
Number of Test Forms	2 Forms—KS and JS
Number of Items on Test	45
Administration Time	10 minutes for directions and preparation; 35 minutes for actual test taking
Test Purpose	The test is designed to identify student strengths and weaknesses in science and also to aid in curriculum planning and improvement.
Content Tested	The test items are categorized by content cluster and include Physical Science (11 items), Earth Science (14 items), and Life Science (20 items). Test items are also classified by behaviors including knowledge (14 items), comprehension (11 items), inquiry skills (15 items), and critical analysis (5 items).
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Item Performance, Stanines, Performance by Behavioral Classification, Local Norms
Groups	Raw Scores, Percent Correct by Item, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Group Stanines for Buildings and Systems, Number of Students At or Above the Median for Each Objective and Cluster, Local Norms
Target Audience	Students in grades 3.5–4.9
Copyright Date	1978 (Date of Next Revision: 1985)
Cost of Specimen Set	$4.55
Item Type	4 alternative multiple choice
Norms	The number of students in the norming sample include 3682 students (spring, grade 3, form JS), 4127 students (spring, grade 3, form KS), 5497 students (fall, grade 4, form JS), 5263 students (fall, grade 4, form KS), 3952 students (spring, grade 4, form KS), 3656 students (spring, grade 4, form KS). Students were selected to be representative of the national population. The norms offer two empirically derived norming midpoints at October 15 and April 20. About 75 percent of the students in the norming sample were tested in both fall and spring of the same school year so that expected growth could be determined.
Reliability	.90 using the Kuder-Richardson Formula 20
Validity	The test user should examine the test items to determine the degree of match between test content and the school's curriculum. Judgments about the quality of the school's curriculum and individual student performance can be made in a valid fashion if the match is high. The test, however, was designed around the content of typical science instruction at this grade range.
Types of Reports	Individual pupil level reports with norm-referenced scores and cluster scores, class summaries, class lists with norm-referenced or cluster scores, school summaries, item analysis, individual pupil labels, graphic summaries, ranked lists, predicted achievement reports, magnetic tape, punched cards, system summaries, and pre/post reports can be provided.

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Metropolitan Achievement Test: Science Test (5th Edition)

Elementary Level, continued

Other Information

Practice tests are available for students. Users have the option of machine scorable booklets or answer sheets. Hand scoring capability is provided. Items have been developed and reviewed by minority groups in an attempt to alleviate racial, sex, and ethnic bias. Procedures for this minority review are found in special reports available from the publisher. An extensive teacher's manual gives a description of the test, procedures for administration, interpretation suggestions for scores, and reports and norms tables. The science test is part of an achievement test battery which also includes reading, mathematics, language, and social studies.

Metropolitan Acheivement Test: Science Survey (5th Edition)

Intermediate Level

Test Author(s)	George Prescott, Irving Balow, Thomas Hogan, Roger Farr
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—JS and KS
Number of Items on Test	50
Administration Time	10 minutes for directions and preparation; 35 minutes for actual testing
Test Purpose	The test is designed to identify pupil strengths and weaknesses in science and to analyze the science curriculum of a school or district so that programs can be maintained or improved.
Content Tested	Test items measure achievement in the Physical Sciences (16 items), Earth Science (12 items), and Life Science (22 items). Test items are also classified by behaviors including knowledge (17 items), comprehension (21 items), inquiry skills (6 items) and critical analysis (6 items).
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Item Performance, Stanines, Performance by Content Cluster, Performance by Behavioral Classification, Local Norms
Groups	Raw Scores, Percent Correct by Item, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Group Stanines for Buildings and Systems, Number of Students At or Above the Median for Each Objective and Cluster, Local Norms
Target Audience	Students in grades 5.0-6.9
Copyright Date	1978 (Date of Next Revision: 1985)
Cost of Specimen Set	$4.55
Item Type	4 alternative multiple choice
Norms	Empirical norms were derived from testing in the fall and spring of the same school year. The number of students taking the test forms include 5647 students (grade 5, fall, form JS), 5473 students (grade 5, fall, form KS), 3694 students (grade 5, spring, form JS), 4011 students (grade 5, spring, form KS), 5325 students (grade 6, fall, form JS), 5233 students (grade 6, fall, form KS), 3875 students (grade 6, spring, form JS), 4043 students (grade 6, spring, form KS). Approximately 70 percent of the pupils took the test in both the fall and spring so that expected achievement growth could be obtained.
Reliability	.88 using Kuder-Richardson Formula 20
Validity	The user should carefully examine the test items to determine the degree to which the test reflects the curriculum. The test was designed to measure the broad range of content found in typical science courses at this level.
Types of Reports	Individual pupil level reports with norm-referenced scores or cluster scores, individual pupil labels, class summaries, class lists with cluster or norm-referenced scores, school summaries, item analysis, graphic summaries, ranked lists, predicted achievement reports, magnetic tapes, and punched cards can be provided.
Other Information	The science achievement survey is part of an achievement battery which assesses the basic skills of reading, mathematics, language, and social studies. Answer sheets accompany this test. Practice test items are available. Items have been reviewed for racial, ethnic, and sex bias by minority representatives. Procedures for this task are outlined in special reports available from the publisher. The accompanying teacher's manual describes the test, gives directions for administration, describes interpretations and uses of test scores and reports, and lists norms and score conversion tables. Machine or hand scoring capability is provided.

Sequential Tests of Educational Progress

STEP III, Level E—Science

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	50
Administration Time	40 minutes
Test Purpose	To determine student and group achievement for the purpose of individual student assessment and program evaluation.
Content Tested	Biological Science, Earth Science, Physical Science
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Standard Scores, Percentile Bands, Stanines, Grade Level Indicators
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Domain Scores, Standard Scores
Target Audience	Students in grades 3.5–4.5
Copyright Date	1979 (Date of Next Revision: Revision anticipated about every 6 years)
Cost of Specimen Set	Free for small-scale requests
Item Type	4 alternative multiple choice
Norms	Data for the development of norms were gathered in October, 1977 and May, 1978 on about 1600 students. The consideration of factors such as region of the country, urbanicity, percent minority population, socioeconomic status, and educational status seems to provide a norming sample that is nationally representative. Special education students not enrolled in regular classes, students in vocational-technical school districts, and other special students were not included in the norming sample.
Reliability	.91 for grade 3 and .93 for grade 4 using Kuder-Richardson Formula 20
Validity	Some evidence has been gathered on concurrent, predictive, and construct validity. The test user must review the test content to determine the degree of content validity.
Types of Reports	Alphabetic roster of scores by class, rank order score roster, record label, individual item analysis, individual student report, group item analysis, frequency distribution, and an administrator's summary can be provided.
Other Information	The test measures concepts related to organismic biology, plants, animals, continuity of life, ecology and the environment, the Earth in the universe, the atmosphere, mapping and scaling, gases, liquids, solids, solutions, forces and motions, magnetism, measuring, and classifying through the processes of identifying, observing, experimenting, measuring, interpreting, and inferring and predicting. Test items were reviewed editorially for detection of bias. The test publisher makes available several support materials such as student preview tests, a manual and technical report, STEP content description, teacher resource guide, and a description of how score reports can be utilized.

SRA Achievement Series—Science

Level E

Test Author(s)	Robert Naslund, Louis Thorpe, D. Welty Lefever
Publisher	Science Research Associates, Inc.
Number of Test Forms	2 forms—1 and 2
Number of Items on Test	40
Administration Time	About 10 minutes for directions and answer sheet completion; 30 minutes for actual testing
Test Purpose	The publisher indicates that the test is designed to describe performance in science for individuals and groups of pupils.
Content Tested	11 items assess science knowledge, 16 items relate to science concepts and principles, and 13 items deal with science processes. No categorization by science content area is given by the publisher. The major content emphasis seems to be in physical and life sciences.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Groups	Raw Scores, Percent Correct, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Target Audience	Students in grades 4-6
Copyright Date	1978 (Date of Next Revision: not specified)
Cost of Specimen Set	Available, no price listed
Item Type	4 alternative multiple choice
Norms	Approximately 3700 grade 4 students and 3200 grade 5 students participated in the norming of this test. The test norms were empirically derived twice in one school year. The midpoints of the norming periods are October 1 and April 22. About 80 percent of the schools tested in the fall were tested again in the spring. The sample for norming was drawn to be as representative as possible of the national student population.
Reliability	Ranges from .80 to .85 depending upon grade level using the Kuder-Richardson Formula 20
Validity	Users should examine the test to assure a high degree of content validity. During test development, test authors examined local and state curriculum guides to determine typically taught science content. Teachers helped to write and review the items to better assure content validity.
Types of Reports	Score listing by class, group summary report, frequency distributions, individual student label, individual skill profile, group skill profile, ranked listing and group item analysis can be provided.
Other Information	Growth scale values are provided for the test which allow the user to plot both individual and group achievement gains across time, and to compare this to the national sample. Editorial and statistical techniques were used in an attempt to alleviate bias for women and minorities. In addition to national norms, special norms are provided. These include Title I school norms, large-city school norms and nonpublic school norms. Publishers are gathering information to determine construct, concurrent, and predictive validity.

Stanford Achievement Test: Science

Primary Level II

Test Author(s)	R. Madden, E. Gardner, H. Rudman, B. Karlsen, J. Merwin
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—A and B
Number of Items on Test	27
Administration Time	Untimed
Test Purpose	To measure the child's ability to understand basic concepts reflecting the natural and physical sciences.
Content Tested	The test is intended to concentrate on the biological and physical sciences through the skills of measuring, estimating, and drawing inferences from data.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Stanines, Grade Equivalent, Scale Scores, Local Norms, Individual Item Response Data
Groups	Raw Scores, Grade Equivalent, Scale Scores, Percent Correct by Item, Group Stanines
Target Audience	Students in grades 2.5-3.4
Copyright Date	1972 (Date of Next Revision: 1982)
Cost of Specimen Set	$3.60
Item Type	3 alternative multiple choice; items read to students
Norms	Norms were gathered in October, 1971 and February and May, 1972. All three forms of the test were standardized simultaneously. Factors considered in developing a representative sample of students included geographic distribution and size of school system. Over 100 school systems participated in the norming. Data were weighted to construct norm groups by grade level that were comparable in mental ability to the norm groups for the Otis-Lennon Mental Ability Test.
Reliability	.74 for grade 3 using Kuder-Richardson Formula 20
Validity	The publisher recommends that the test user compare the objectives which formulate the framework for this test with the school's or district's curriculum in an effort to establish content validity.
Types of Reports	Various individual and group reports can be generated by the publisher for the test user.
Other Information	The science test is part of a basic skills battery which measures student achievement in reading, word study skills, mathematics concepts, mathematics computation, mathematics applications, spelling, social science, and listening comprehension. Ancillary materials include directions for administering the test, norms booklet, guide for interpreting test scores, administrator's guide, and technical data report. A student practice test is also available. Machine and hand scoring capability is offered to the user.

Stanford Achievement Test: Science

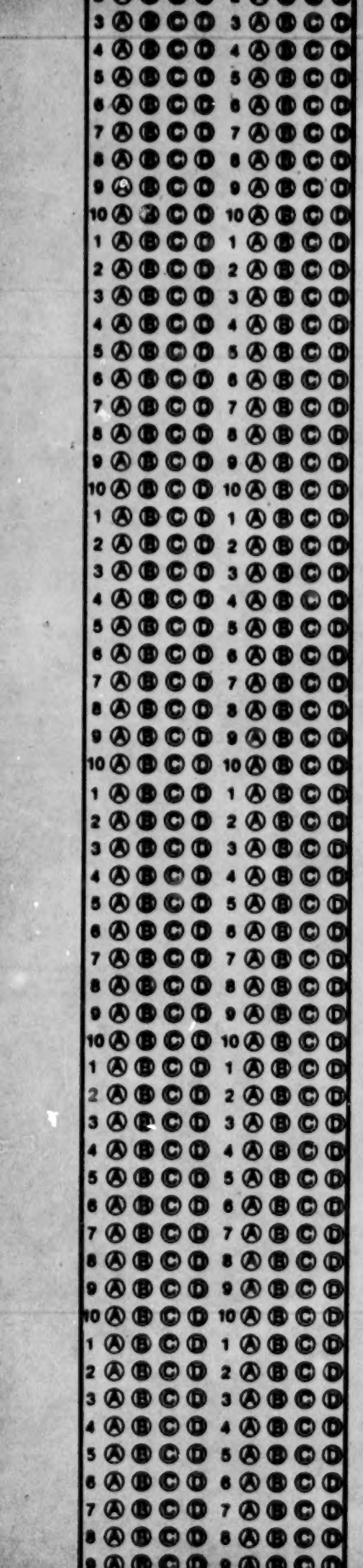
Primary Level III

Test Author(s)	R. Madden, E. Gardner, H. Rudman, B. Karlsen, J. Merwin
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—A and B
Number of Items on Test	42
Administration Time	25 minutes
Test Purpose	To measure the child's ability to understand basic concepts in the natural and physical sciences.
Content Tested	Matter, energy, change in the physical universe, environmental interaction of living objects, heredity, interdependence of living objects, science processes, measurement, hypothesis testing
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Stanines, Grade Equivalent, Scale Scores, Local Norms, Individual Item Response Data
Groups	Raw Scores, Grade Equivalent, Scale Scores, Percent Correct by Item, Group Stanines
Target Audience	Students in grades 3.5-4.4
Copyright Date	1972 (Date of Next Revision: 1982)
Cost of Specimen Set	$3.60
Item Type	4 alternative multiple choice
Norms	This test was normed in October, 1971 and May, 1972. Factors used to better assure the representativeness of the sample included geographic distribution, size of school district, and student ability as measured by the Otis-Lennon Mental Ability Test. All three test forms were standardized simultaneously.
Reliability	.91 for beginning grade 4 using Kuder-Richardson Formula 20
Validity	The publisher encourages the test user to compare the contents of the test with the science curriculum.
Types of Reports	A variety of individual and group reports can be produced through both hand and machine scoring options.
Other Information	The science test is part of a test battery which measures ten other areas in the basic skills. Materials which accompany the test include test administration directions, norms tables, guide for interpreting test scores, administrator's guide, technical report, and student practice test. Student responses can be machine or hand scored.

Stanford Achievement Test: Science

Intermediate Level I

Test Author(s)	R. Madden, E. Gardner, H. Rudman, B. Karlsen, J. Merwin
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—A and B
Number of Items on Test	60
Administration Time	30 minutes
Test Purpose	To measure student ability to understand basic concepts in the natural and physical sciences.
Content Tested	Matter, energy, change in the physical universe, effects of heredity, interdependence, environmental interaction, basic science processes, measurement, functional science processes, functional skills
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Stanines, Grade Equivalent, Scale Scores, Local Norms, Individual Pupil Response Data
Groups	Raw Scores, Grade Equivalent, Scale Scores, Percent Correct by Item, Group Stanines
Target Audience	Students in grades 4.5-5.9
Copyright Date	1972 (Date of Next Revision: 1982)
Cost of Specimen Set	$3.60
Item Type	4 alternative multiple choice
Norms	Norms were gathered in October, 1971 and May, 1972 on students in over 100 districts across all levels of the test. Size of the school district and geographic distribution were important factors in selecting the districts. A normal distribution of ability appears to be descriptive of the norming sample. This was determined through the simultaneous administration of an aptitude test.
Reliability	.91 for grade 5 using the Kuder-Richardson Formula 20
Validity	The publisher encourages a thorough review of the test content together with the science curriculum in an effort to determine the degree of content validity.
Types of Reports	A variety of reports can be produced for individuals and groups.
Other Information	Ten other basic skills instruments plus the science test formulate the entire Stanford test battery. The test package contains a practice test, directions for test administration, norms booklet, guide for interpreting test data, administrator's guide, and technical report. Student responses can be hand or machine scored.



Middle/Junior High School Science Tests

Comprehensive Test of Basic Skills

Level 3, Science

Test Author(s)	CTB/McGraw-Hill
Publisher	CTB/McGraw-Hill
Number of Test Forms	2 forms—S and T
Number of Items on Test	41
Administration Time	40 minutes
Test Purpose	Results from this test can be used to determine strengths and weaknesses in science for both individuals and groups by content area and science process.
Content Tested	Form S includes items in Chemistry, Physics, Earth Science, Ecology, Botany, Zoology, and General Science. Items are coded to processes including recognition, classification, quantification, data interpretation, prediction from data, hypothesis evaluation, and design analysis.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Grade Equivalent, Stanines, Expanded Scale Scores, Anticipated Achievement Scores (when used in combination with the Short Form of Academic Aptitude), Performance on Items
Groups	Raw Scores, Grade Equivalent, Expanded Scale Scores, Anticipated Achievement Scores
Target Audience	Students in grades 6.5-8.9
Copyright Date	1973 (S), 1975 (T) (Date of Next Revision: 1981)
Cost of Specimen Set	$5.90
Item Type	4 alternative multiple choice
Norms	Norms were based on the administration of this test in April to approximately 4700 grade 6 students, 13,900 grade 7 students, and 6100 grade 8 students. Schools in the norming sample were of varying sizes; of differing public, private, and parochial affiliation; and were located in towns of varying size. Descriptions of ethnic and minority backgrounds, socioeconomic levels, and geographic distribution are found in the technical reports which accompany the test.
Reliability	.86 for grade 6; .87 for grade 7; and .90 for grade 8 using Kuder-Richardson Formula 20
Validity	Content specifications for the test were established after determining typical content and processes found in science instruction at the applicable grade levels of this test. This was performed by surveying schools regarding content, instructional practices, and curriculum materials. Items have undergone a review for potential bias through editorial and statistical methods.
Types of Reports	The publisher offers an individual student report which lists test scores, percentile bands, and item level information by science process category. In addition, a group report listing item level performance for each student by skill area can be provided. Other reports include (1) an item analysis listing percent correct by item; (2) frequency distributions by grade equivalent, expanded scale scores, stanines, or raw scores; and (3) gummed labels with individual pupil summary data.
Other Information	The science test is part of a basic skills battery. A test booklet plus an answer sheet are utilized by the student and may be machine or hand scored. A variety of manuals accompany the test and include directions for planning the testing session, administering the test, and interpreting the test scores. Two technical bulletins offer statistical information about the test and a teacher's guide provides suggested follow-up instructional activities. A practice test item precedes the test.

Educational Development Series

Advanced Level Science

Test Author(s)	George and Jacqueline Mallinson
Publisher	Scholastic Testing Service, Inc.
Number of Test Forms	4 forms—B, C, R, and S
Number of Items on Test	50
Administration Time	20 minutes
Test Purpose	To provide norm-referenced information for individuals and groups in science and compare student achievement with career plans and interests.
Content Tested	Health and Safety; Biological Sciences; Earth Sciences; Physical Sciences; simple machines; maps, graphs, and charts; critical thinking
Available Test Scores	
Individual Pupil	National Percentile, Raw Scores, Grade Scores, Expanded Scale Scores, Normal Curve Equivalent
Groups	Percent Correct by Item, Raw Scores, Grade Scores, Expanded Scale Scores, Normal Curve Equivalent
Target Audience	Students in grades 6-9
Copyright Date	1976 (Date of Next Revision: 1979-80)
Cost of Specimen Set	$2
Item Type	5 alternative multiple choice; some modified true and false
Norms	About 5,000 to 10,000 students per grade level across all five forms were utilized to develop the norms for this test. When comparing the characteristics of urban/rural distribution, public/private school affiliation, and geographic distribution, the test sample compares well with the national population as reported in *Statistical Abstract of the United States–1975*. Norms were gathered in the fall and spring of school years 1974-75 and 1975-76.
Reliability	.78 to .90 depending upon test form and using Kuder-Richardson Formula 21
Validity	The publisher encourages users to thoroughly review the test in conjunction with the curriculum to establish content validity. The publisher has correlated this test with the Stanford Achievement Test, Iowa Test of Basic Skills, Iowa Test of Educational Development, and student grade point averages in an effort to establish construct and predictive validity.
Types of Reports	Individual pupil label; group record of results by class; group summary by grade level, by school or school district; individual item report; group item report
Other Information	The test is one of a series of tests within a test battery designed for the middle/junior high grade levels. The other tests include career interests, school plans, favorite school subjects, nonverbal ability, verbal ability, English, mathematics, social studies, and career planning. Ancillary materials for this test include a teacher's manual of directions, a test score and report interpretation document, technical report, and teacher's manual of directions. A review for bias of the racial, sex, or ethnic variety is not covered in any of the related published documents. For test administration the student uses a test booklet and answer sheet. Test items appear to concentrate primarily on factual recall of science information.

Metropolitan Achievement Test: Science Survey (5th Edition)

Advanced Level

Test Author(s)	George Prescott, Irving Balow, Thomas Hogan, Roger Farr
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—JS and KS
Number of Items on Test	55
Administration Time	10 minutes direction and preparation; 35 minutes actual test time
Test Purpose	The test can help to identify student strengths and weaknesses in science and aid in the analysis and evaluation of the school's science curriculum.
Content Tested	Test items assess the Physical Sciences (17 items), Earth Science (16 items), and Life Science (22 items). Items are also classified by behavior including knowledge (12 items), comprehension (18 items), inquiry skills (18 items), and critical analysis (7 items).
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Item Performance, Stanines, Performance by Content Cluster, Performance by Behavioral Classification, Local Norms
Groups	Raw Scores, Percent Correct by Item, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Group Stanines for Buildings and Systems, Number of Students At or Above the Median for Each Objective and Cluster, Local Norms
Target Audience	Students in grades 7.0-9.9
Copyright Date	1978 (Date of Next Revision: 1985)
Cost of Specimen Set	$4.55
Item Type	4 alternative multiple choice
Norms	This test was normed twice during a single school year. Midpoints of the empirical norming periods are October 15 and April 20. Approximately 75 percent of the students at applicable grades took the test both in the spring and fall. Numbers of students in the standardization sample include 5143 students (fall, grade 7, form JS), 4714 students (fall, grade 7, form KS), 4191 students (spring, grade 7, form JS), 2877 students (spring, grade 7, form KS), 5006 students (fall, grade 8, form JS), 4978 students (fall, grade 8, form KS), 3375 students (spring, grade 8, form JS), 4157 students (spring, grade 8, form KS), 4653 students (fall, grade 9, form JS), 3527 students (fall, grade 9, form KS), 1993 students (spring, grade 9, form JS), and 2493 students (spring, grade 9, form KS).
Reliability	.88 using Kuder-Richardson Formula 20
Validity	Though the test was carefully designed to reflect the content of typical science programs at this level, the user should examine the degree of match between what is tested and the school's curriculum.
Types of Reports	Individual pupil level reports with norm-referenced or cluster scores, individual pupil labels, class summaries, class lists with norm-referenced or cluster scores, class system or school summaries, item analysis, graphic summaries, ranked lists, predicted achievement reports, magnetic tape, punched cards, and pre/post score reports can be provided.

(continued)

Metropolitan Achievement Test: Science Survey (5th Edition)

Advanced Level, continued

Other Information

Practice test items are provided for students. This level of the test is used with machine scorable answer sheets but a hand scoring capability is also provided. Items have been reviewed by minority representatives for the detection of items containing racial, sex, or ethnic bias. A teacher's manual provides a description of the test, directions for test administration, suggestions for interpreting and using test scores and reports, and norm and score conversion tables.

Sequential Tests of Educational Progress

STEP III, Levels F, G, H—Science

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	50
Administration Time	40 minutes
Test Purpose	To determine student science achievement for the purpose of individual student assessment and program evaluation.
Content Tested	Biological Science, Earth Science, Physical Science
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Standard Scores, Percentile Bands, Stanines, Grade Level Indicators
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Domain Scores, Standard Scores
Target Audience	Students in grades 4.5-7.5
Copyright Date	1979 (Revision anticipated about every 6 years)
Cost of Specimen Set	No cost for small scale requests
Item Type	4 alternative multiple choice
Norms	Factors used in developing the norming sample included the geographic region of the country, urbanicity, percent of minority population, socioeconomic status, and educational status. Data for the development of the norms were gathered via testing of students in grades 4 through 7. Nearly 4500 students across those grades formulated the norm sample. Separate norms are provided for each grade and by content area at grade 7. Special groups of students have been excluded from the norms.
Reliability	.89 to .91 depending upon grade level using Kuder-Richardson Formula 20
Validity	Some evidence is provided for the determination of concurrent, predictive, and construct validity. In order to determine the degree of content validity the test user should review the test content and match it to what is taught in the classroom.
Types of Reports	Alphabetic roster of scores by class, rank order score roster, record label, individual item analysis, individual student reports, group item analysis, frequency distribution, and an administrator's summary can be provided.
Other Information	The test items measure the areas of cellular and molecular biology, plants, animals, continuity of life, ecology and the environment, Earth in the universe, the Earth's atmosphere, states of matter, properties of matter, reactions, structure, energy, forces and motions, magnetism, electricity, and light. To help students become comfortable with item types, a preview test is provided. Items have been reviewed for the purpose of reducing bias. A technical report, content description, teacher resource guide and a description of how test reports can be utilized are provided by the publisher.

SRA Achievement Series—Science

Level F

Test Author(s)	Robert Naslund, Louis Thorpe, D. Welty Lefever
Publisher	Science Research Associates, Inc.
Number of Test Forms	2 forms—1 and 2
Number of Items on Test	40
Administration Time	About 10 minutes for preparation; 30 minutes actual testing time
Test Purpose	The publisher indicates that the test is designed to describe performance in science for individuals and groups of students.
Content Tested	Test items have a heavy emphasis on the life and physical sciences. 10 items are classified in the knowledge category. 18 items assess science concepts and principles, while 12 items test science processes.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Groups	Raw Scores, Percent Correct, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Target Audience	Students in grades 6-8
Copyright Date	1978 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available, no price listed
Item Type	4 alternative multiple choice
Norms	Students selected for the development of the norms were chosen to be representative of the nation. More than 3500 grade 5 students, 6600 grade 6 students and 3100 grade 7 students were used for the norming sample for this test. The norms included representation from large and small schools, public and nonpublic schools, regular and Title I schools, and rural and urban schools. About 80 percent of the schools tested in the fall were retested in the spring. October 1 and April 22 are the norm midpoints.
Reliability	.77-.83 depending upon grade level using Kuder-Richardson Formula 20
Validity	Before test development, curriculum guides for states and school districts were examined. Test items were developed with the aid of teachers to reflect typical science content and skills taught at this level. Items were rated by other groups of teachers. The test publisher is developing information on concurrent, predictive, and construct validity.
Types of Reports	Score listings by class, group summary reports, frequency distribution, individual student label, individual skill profile, group skill profile, ranked listings, and group item analysis can be provided.
Other Information	Test booklets plus machine scorable answer sheets are available for this test. Special norms have been developed and include Title I norms, large-city school norms, and norms for nonpublic schools. The capability of comparing individual or group achievement growth across time is provided as an option. Test items were reviewed editorially and statistically for racial, sex, and ethnic bias. A teacher's manual and an interpretation manual give directions for the use of test data in instructional or curriculum planning.

Stanford Achievement Test: Science

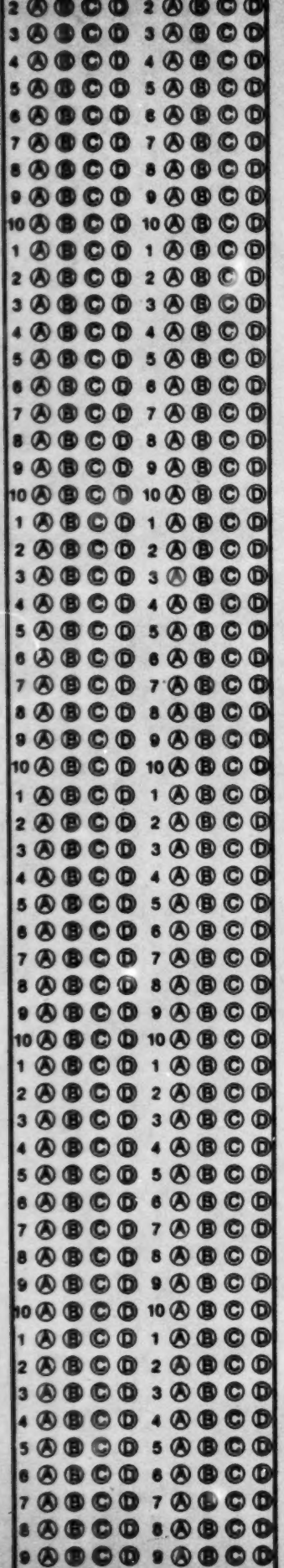
Intermediate Level II

Test Author(s)	R. Madden, E. Gardner, H. Rudman, B. Karlsen, J. Merwin
Publisher	The Psychological Corporation
Number of Test Forms	2 Forms—A and B
Number of Items on Test	60
Administration Time	30 minutes
Test Purpose	To measure a student's ability to understand basic concepts which reflect the natural and physical sciences.
Content Tested	Matter, energy, change in the physical universe, heredity and the environment, environmental interaction, interdependence, basic science processes, measurement, function, science processes, functional skills
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Stanines, Grade Equivalent, Scale Scores, Local Norms, Individual Pupil Response Data
Groups	Raw Scores, Grade Equivalent, Scale Scores, Percent Correct by Item, Group Stanines
Target Audience	Students in 5.5-6.9
Copyright Date	1972 (Date of Next Revision: 1982)
Cost of Specimen Set	$3.60
Item Type	4 alternative multiple choice
Norms	The test was normed in October, 1971 and May, 1972. Over 100 school districts, across all levels and forms of the test, participated in the norming and standardization. All three forms were normed through the same process. Factors important in selecting the norming sample included size of school district, student ability, and geographic distribution of school districts.
Reliability	.92 for grade 6 using Kuder-Richardson Formula 20
Validity	The user is encouraged to compare the content of the test with the science curriculum to establish the degree of content validity.
Types of Reports	Several individual and group reports can be generated.
Other Information	The science test is part of a basic skills test battery. A practice test for pupils is provided and recommended. Ancillary materials include directions for planning and administering the testing sessions, a guide for interpreting the scores, a norms booklet, a technical data report, and an administrator's guide. Machine or hand scoring capabilities are provided as options.

Stanford Achievement Test: Science

Advanced Level

Test Author(s)	R. Madden, E. Gardner, H. Rudman, B. Karlsen, J. Merwin
Publisher	The Psychological Corporation
Number of Test Forms	2 forms—A and B
Number of Items on Test	60
Administration Time	30 minutes
Test Purpose	To measure a pupil's ability to understand basic concepts in the natural and physical sciences.
Content Tested	Matter, energy, change in the physical universe, effects of heredity and environment, environmental interaction, interdependence, basic science processes, basic measurement skills, functional science processes, functional skills
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Stanines, Grade Equivalent, Scale Scores, Local Norms, Individual Item Response Data
Groups	Raw Scores, Grade Equivalent, Scale Scores, Percent Correct by Item, Group Stanines
Target Audience	Students in grades 7.0-9.5
Copyright Date	1972 (Date of Next Revision: 1982)
Cost of Specimen Set	$3.60
Item Type	4 alternative multiple choice
Norms	Norms were developed in October, 1971 and May, 1972. Over 100 school districts participated in the norming sample across all levels and forms of the test. Important factors in selecting the sample include size and geographic distribution of the schools, and student ability levels.
Reliability	.93 for grade 8 using Kuder-Richardson Formula 20
Validity	The user is encouraged to compare the school's science curriculum with the test content to determine the degree of content validity.
Types of Reports	A variety of individual and group reports is available.
Other Information	The science test is part of a basic skills battery which tests for other content areas. Materials accompanying the test include a practice test, directions for administering the test, a norms booklet, a technical report, and a guide for interpreting test scores.



Secondary Science Tests

ACS/NSTA Cooperative Chemistry Test

High School Level

Test Author(s)	Prepared by a group of 40 chemistry teachers; group chaired by Theo. Ashford
Publisher	Examinations Committee, American Chemical Society
Number of Test Forms	7 forms
Number of Items on Test	80
Administration Time	80 minutes
Test Purpose	The publisher indicates that the test is used to determine student ability and comprehension of the content of one year of high school chemistry.
Content Tested	The test assesses introductory chemistry concepts (20 items), physical concepts (20 items), atomic and molecular concepts (20 items), and solutions concepts (20 items).
Available Test Scores	
Individual Pupil	Number Correct, National Percentile, Subtest Scores
Groups	National Percentile Distribution by various categories of courses and students
Target Audience	Students who have taken one year of high school chemistry
Copyright Date	1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980 (Revised each year)
Cost of Specimen Set	$3
Item Type	4 alternative multiple choice
Norms	Norms are based on about 9000 high school students whose teachers elect to administer the test and volunteer to send their answer sheets to the publisher. The answer sheets are then scored and national percentile ranks developed. The raw score to percentile conversions are returned to the participating teachers. No evidence is presented that would indicate an attempt to provide national representation of the norming population. A summary of the norms is published in the *Journal of Chemical Education*.
Reliability	No reliability estimate provided
Validity	Since a committee of teachers writes the test items, it might be assumed that the test has some content validity. Evidence for other types of validity is not provided.
Types of Reports	National Percentile Rank
Other Information	Two experimental forms are piloted before the final form of the test is developed. No special consideration is given to racial, sex, or ethnic bias.

ACS/NSTA Cooperative Chemistry Test

Advanced Level

Test Author(s)	Prepared by a group of 40 chemistry teachers; group chaired by Theo. Ashford
Publisher	Examinations Committee, American Chemical Society
Number of Test Forms	3 forms—1974 ADV, 1977 ADV, and 1980 ADV
Number of Items on Test	50
Administration Time	80 minutes
Test Purpose	The test can be used to determine student ability and comprehension of chemistry.
Content Tested	Atomic structure, chemical bonding, molecular geometry, carbon chemistry, thermodynamics, kinetics, solids, liquids, gas, solutions, acid-base chemistry, electrochemistry, chemical periodicity, stoichiometry, and laboratory procedures
Available Test Scores	
Individual Pupil	Number Correct, Number Correct Adjusted for Guessing, National Percentile, Subtest Scores
Groups	National Percentile Distribution
Target Audience	Students who have taken 2 years of high school chemistry or an honors course
Copyright Date	1974 and 1977 (Revised each year)
Cost of Specimen Set	$3
Item Type	4 alternative multiple choice
Norms	Norms are based on the results of about 500 students whose teachers volunteer to submit answer sheets to the publisher for machine scoring. From these results raw score to percentile conversions are made and returned to the participating teachers. Abbreviated norms are published in the *Journal of Chemical Education.*
Reliability	None reported
Validity	Since the test is developed by chemistry teachers, it might be assumed that the test has some content validity. No information is given on construct, concurrent, or predictive validity.
Types of Reports	National Percentile Rank by type of student and professional goals is offered.
Other Information	Two forms are administered to about 800 students. Items are analyzed and a final form is prepared. No special consideration is given to racial, sex, or ethnic bias.

Comprehensive Test of Basic Skills

Level 4, Science

Test Author(s)	CTB/McGraw-Hill
Publisher	CTB/McGraw-Hill
Number of Test Forms	Two forms—S and T
Number of Items on Test	40
Administration Time	40 minutes
Test Purpose	Results from this test can be used to determine strengths and weaknesses in science for both individuals and groups by content area and science process.
Content Tested	Form S includes items in Chemistry, Physics, Earth Science, Ecology, Botany, Zoology, and General Science. Items are coded to processes including recognition, classification, quantification, data interpretation, prediction from data, hypothesis evaluation, and design analysis.
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Grade Equivalent, Stanines, Expanded Scale Scores, Anticipated Achievement Scores (when used in combination with the Short Form of Academic Aptitude), Performance on Items
Groups	Raw Scores, Grade Equivalent, Expanded Scale Scores, Anticipated Achievement Scores
Target Audience	Students in grades 8.5-12.9
Copyright Date	1973 (S), 1975 (T) (Date of Next Revision: 1981)
Cost of Specimen Set	$5.90
Item Type	4 alternative multiple choice
Norms	Approximately 6300 grade 8 students, 13,500 grade 9 students, 11,200 grade 10 students, 1000 grade 11 students, and 900 grade 12 students were administered the test in April. The sample was drawn from school districts of varying characteristics including degree of urbanicity, district size, socioeconomic background, minority and ethnic representation, and geographic spread.
Reliability	.82 for grade 8; .85 for grade 9; .86 for grade 10; .84 for grade 11; .86 for grade 12 using Kuder-Richardson Formula 20
Validity	The items for this test were developed after surveying teachers and curriculum specialists about typical content, processes, instructional practices, and materials used at the grade levels applicable to this test. Items were reviewed for racial and ethnic bias.
Types of Reports	The publisher offers an individual student report which lists test scores, percentile bands, and item level information by science process category. In addition, a group report listing item level performance for each student by skill area can be provided. Other reports include (1) an item analysis listing percent correct by item; (2) frequency distributions by grade equivalent, expanded scale scores, stanines, or raw scores; and (3) gummed labels with individual pupil summary data.
Other Information	The student reads test items in a booklet and marks the correct answer on a separate answer sheet. Answer sheets can be machine or hand scored at the user's option. Ancillary materials include technical reports, a test coordinator's manual, an examiner's manual, and a teacher's guide. The teacher's guide contains some suggestions for instructional follow-up with students. A practice test is offered for the student to complete before starting the test.

Cooperative Science Test

Advanced General Science

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test forms	2 forms—A and B
Number of Items on Test	120
Administration Time	80 minutes
Test Purpose	To measure student achievement on general science topics.
Content Tested	Biology, Astronomy, Geology, Meteorology, Physics, and Chemistry
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Converted Scores, Percentile Bands
Groups	Item Level Information on a National Sample, Converted Scores
Target Audience	Average or high ability general science students in grade 8 and most grade 9 general science students
Copyright Date	1962 (Date of Next Revision: Not reported)
Cost of Specimen Set	Not reported
Item Type	5 alternative multiple choice
Norms	Separate norms for suburban, urban and national groups are provided to the test user. Normative information was gathered on grade 9 students in 82 schools. The national sample, though not geographically representative, does include students from public, Roman Catholic, and independent schools. Through a weighting process the data do represent each school type in appropriate amounts.
Reliability	.94 for each form using Kuder-Richardson Formula 20
Validity	The user is encouraged to review the content of the test to determine the degree of match between what is taught and what the test measures.
Types of Reports	Not reported; machine scoring services are not provided by the company.
Other Information	The test appears to measure content typical of general science courses. Part I of the test measures concepts in biology, astronomy, geology, and meteorology while Part II assesses physics and chemistry topics. Separate norms are not provided for each test part.

Cooperative Science Test

Biology

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test Forms	2 forms—A and B
Number of Items on Test	120
Administration Time	80 minutes
Test Purpose	To measure student achievement in biology.
Content Tested	General and human biology; diversity of life
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Converted Scores, Percentile Bands
Groups	Item Level Information, Converted Scores
Target Audience	High school biology students
Copyright Date	1963 (Date of Next Revision: Not reported)
Cost of Specimen Set	Not reported
Item Type	5 alternative multiple choice
Norms	Tests were normed in May, 1963. Students in grades 10-12 in 107 schools formulated the norm group. School types included public, Roman Catholic, and independent schools. Separate norms are not provided for each grade level tested.
Reliability	.82 to .92 depending upon test part and form using Kuder-Richardson Formula 20
Validity	The user is encouraged to review the test to ascertain the degree of match between test items and the instructional program.
Types of Reports	No computer reports are generated by the test publisher.
Other Information	Part I measures the topics of the nature of life and of science, the cell, characteristics of life, heredity and change, anatomy and physiology, and nutrition, hygiene, and disease. Part II deals with classifications, major plant groups, major animal groups, ecology and conservation, distinctive characteristics of typical forms, anatomy of typical forms, life cycles of typical organs, and physiology of typical organs.

Cooperative Science Test

Chemistry

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test Forms	2 forms—A and B
Number of Items on Test	115
Administration Time	80 minutes
Test Purpose	To measure student achievement on the outcomes of typical high school courses.
Content Tested	General concepts and principles of chemistry, laboratory
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Converted Scores, Percentile Bands
Groups	Item Level Information on a National Sample, Converted Scores
Target Audience	High school chemistry students
Copyright Date	1964 (Date of Next Revision: Not reported)
Cost of Specimen Set	Not reported
Item Type	5 alternative multiple choice
Norms	This test was normed in May, 1963. Student results from 98 schools were utilized to construct the norms. Schools participating in the norming represented public, Roman Catholic, and independent schools. The norms provided combine chemistry students in grades 10-12.
Reliability	.91 for form A and .88 for form B using Kuder-Richardson Formula 20
Validity	The user should assess the degree of match between test items and the curriculum.
Types of Reports	Machine scoring services are not provided by the company.
Other Information	Part I of the test assesses the topics of matter, reactions, solutions, structure, electrical relations, elements, and compounds. Many of the items require the student to apply the concepts within chemistry. Part II of the test measures the topics of laboratory materials, scientific methods, laboratory skills and techniques, illustration and clarification of scientific principles, and laboratory records and reports. Instructions for the construction and use of local norms are provided.

Cooperative Science Test

General Science

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test Forms	2 forms— A and B
Number of Items on Test	60
Administration Time	40 minutes
Test Purpose	To measure student achivement in general science.
Content Tested	Biology, Chemistry, Physics, Astronomy, Geology, Meteorology
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Converted Scores, Percentile Bands
Groups	Item Level Information, Converted Scores
Target Audience	Students in introductory general science courses in grades 7-9
Copyright Date	1962 (Date of Next Revision: Not reported)
Cost of Specimen Set	Not reported
Item Type	5 alternative multiple choice
Norms	Tests were normed in May, 1963. National norms were generated using data from grade 7, 8, and 9 students and are presented as separate norms. General science students in 76 schools were used to develop the norms. Class units were selected from public, Roman Catholic, and independent schools.
Reliability	.89 to .92 depending on grade level, using the Kuder-Richardson Formula 20
Validity	The test user is encouraged to review the test in order to determine content validity.
Types of Reports	Not provided; the test company does not provide a machine scoring capability.
Other Information	The test handbook provides some information for interpreting the results.

Cooperative Science Test

Physics

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Testing Service
Number of Test Forms	2 forms—A and B
Number of Items on Test	115
Administration Time	60 minutes
Test Purpose	To measure student achievement in physics.
Content Tested	General physics concepts and principles; laboratory
Available Test Scores	
Individual Pupil	Raw Scores, Percentile Rank, Converted Scores, Percentile Bands
Groups	Item Level Information, Converted Scores
Target Audience	High school physics students
Copyright Date	1963 (Date of Next Revision: Not reported)
Cost of Specimen Set	Not reported
Item Type	5 alternative multiple choice
Norms	Tests were normed in May, 1963 on students in grades 10-12 enrolled in physics classes. Students in the norming sample were located in 85 public, independent, and Roman Catholic schools.
Reliability	.83 to .91 depending upon test part and test form using Kuder-Richardson Formula 20
Validity	The test user is encouraged to review the test to determine content validity.
Types of Reports	Test reports are not produced since no machine scoring capability is provided by the test publisher.
Other Information	The test measures the concepts of mechanics, heat, sound, light, electricity and magnetism, and modern atomic physics in Part I of the test. Part II deals with laboratory materials, scientific methods, laboratory skills and techniques, illustration and clarification of scientific principles, and laboratory records and reports. Items are also coded to taxonomic skills.

Educational Development Series

Senior Level Science

Test Author(s)	George and Jacqueline Mallinson
Publisher	Scholastic Testing Service, Inc.
Number of Test Forms	6 forms—B, C, R, S, T, and U
Number of Items on Test	50
Administration Time	20 minutes
Test Purpose	To provide norm-referenced information for individuals and groups and to compare student achievement status with career plans and interests.
Content Tested	Health and Safety; Biological Sciences; Earth Sciences; Physical Sciences; simple machines; maps, graphs, and charts; critical thinking
Available Test Scores	
Individual Pupil	National Percentile, Raw Scores, Expanded Scale Scores, Normal Curve Equivalent, Grade Scores
Groups	Percent Correct by Item, Raw Scores, Grade Scores, Expanded Scale Scores, Normal Curve Equivalent
Target Audience	Students in grades 9-12
Copyright Date	1978 (Date of Next Revision: 1982)
Cost of Specimen Set	$2
Item Type	5 alternative multiple choice; some modified true and false items
Norms	About 5000 to 10,000 students per grade level across all five forms of the test were used in constructing the norms for this test. The norming sample for the entire test battery closely resembles the national population as reported in *Statistical Abstract of the United States–1975* on the characteristics of urbanicity, geographic distribution, and public or private school affiliation. Spring and fall norms are available.
Reliability	.76 to .88 depending upon form and using Kuder-Richardson Formula 21
Validity	The publisher encourages a critical review of the contents by the user to establish content validity. The publisher has correlated the results of this test with the School and College Ability Test, Sequential Tests of Educational Progress, Iowa Tests of Educational Development, National Merit Scholarship Qualifying Test, Scholastic Aptitude Test, and American College Testing Program.
Types of Reports	Individual Pupil Label; Group Record of Results by Class; Group Summary by Grade Level, by School or School District; Individual Item Report; and a Group Item Report can be provided.
Other Information	The test is one of a series within a complete test battery which includes career interests, career plans, favorite school subjects, nonverbal ability, verbal ability, English, mathematics, social studies, and career planning. Materials that accompany the test include a teacher's manual of directions, a test score and report interpretation document, a technical report, and a manual of administration directions. Test items appear to concentrate primarily on factual recall of science information. Information on a review for racial, sex, or ethnic bias is not provided in the technical report.

Emporia Biology Test

Test I and Test II

Test Author(s)	Ted Andrews and M.W. Sanders
Publisher	Bureau of Educational Measurements, Emporia State University
Number of Test Forms	2 forms for each test—A and B
Number of Items on Test	Depends on test and test form
Administration Time	40 minutes
Test Purpose	To evaluate students in biology.
Content Tested	The test is intended to measure the contents of a number of leading biological textbooks and courses of study.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, Percentiles
Groups	Raw Scores, Percent Correct
Target Audience	High school biology students
Copyright Date	1964 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available; price not given
Item Type	Primarily 5 alternative multiple choice; some matching items
Norms	The publisher provides percentile scores which were computed from the scores made by students in biology classes of a large number of representative schools in many different states. No information is provided on the number of students or the representativeness of the sample.
Reliability	Depends on test and test form; ranges from .82 to .89 using the split-half method
Validity	The publisher indicates that items were validated based upon an analysis of biology textbooks and courses of study, a consideration of social utility, teacher suggestions, a study of student scores and errors on the items, and the relationship of test scores and independently assigned teacher grades.
Types of Reports	No special individual pupil or group reporting mechanisms are provided; the test is hand scored by the test user.
Other Information	Minimal interpretive and technical material is available to the test user.

Emporia Chemistry Test

Test I and Test II

Test Author(s)	A.T. Ericson and M.W. Sanders
Publisher	Bureau of Educational Measurements, Emporia State University
Number of Test Forms	2 forms for each test—A and B
Number of Items on Test	100 items on each test and test form
Administration Time	40 minutes
Test Purpose	The test can be used to measure student and group achievement in high school chemistry. The publisher suggests that the tests can be used to assign course grades in chemistry.
Content Tested	The test assesses Chemistry definitions, formulas, equations, principles, theories, and problems.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, Percentile
Groups	Raw Scores, Percent Correct
Target Audience	Test I is aimed at measuring student achievement after completing one semester of high school chemistry. Test II measures student achievement after one year of high school chemistry.
Copyright Date	1964 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available; price not specified
Item Type	5 alternative multiple choice
Norms	Percentiles were developed for each test and test form. Percentiles were calculated on approximately 1200 to 1600 students per form. Norms were calculated from student scores obtained through the Every Pupil Scholarship testing program in the 1961-62 and 1962-63 school years. No information on the representativeness of the norms is given.
Reliability	Depends on test and test form; ranges from .88 to .91 using the split-half method
Validity	The test was based upon common leading textbooks and courses of study in chemistry. Test items and the general content of the test underwent teacher review and comment.
Types of Reports	No specified reports for individual pupils or groups since the tests are hand scored. A scoring key accompanies the test.
Other Information	Minimal interpretive and technical information is available.

Emporia General Science Test

Test I and Test II

Test Author(s)	Donald Cross and M.W. Sanders
Publisher	Bureau of Educational Measurements, Emporia State University
Number of Test Forms	2 forms for each test—A and B
Number of Items on Test	Depends on test and test form; ranges from 90 to 115 items
Administration Time	40 minutes for each test and test form
Test Purpose	Publisher's materials indicate that the test could be used for assessing student achievement, checking the efficiency of instruction, assigning school marks, identifying pupil and class weaknesses, and determining student motivation.
Content Tested	Test I deals with liquids, pressure, light, environment, air, foods, narcotics, hygiene, clothing, diseases, sanitation, heat, temperature, fire, water, and heavenly bodies. Test II covers heavenly bodies, air, weather and climate, food, plant life, water, water power, hygiene, health, physiology, fire and heat, rocks, soils, building materials, machines, electricity, light and lighting, sound and communication, matter and energy, transportation, and heredity.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, Percentile
Groups	Raw Scores, Percent Correct
Target Audience	High school students. Test I should be used after a first semester course in general science. Test II may be used after the second semester of general science.
Copyright Date	1964 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available; price not specified
Item Type	Primarily 4 alternative multiple choice; some matching items
Norms	Norms in the form of percentiles have been calculated for each test and test form. Percentiles were generated by administering each test and test form to roughly 1800 to 2800 students in schools participating in the Every Pupil Scholarship testing program in 1961-62 and 1962-63. Descriptions of the students or schools in the norming were not provided by the publishers.
Reliability	Ranges from .91 to .93 using the split-half method
Validity	The publisher indicates that the content of the test was developed after a study of textbooks, courses of study, and teacher comments on test items.
Types of Reports	No special computer reports are produced. Machine scoring capability is not available. Teachers or other users must hand score the tests with the key provided.
Other Information	Minimal interpretive material is available to the consumer.

Emporia Physics Test

Test I and Test II

Test Author(s)	Gerald L. Witten and M.W. Sanders
Publisher	Bureau of Educational Measurements, Emporia State University
Number of Test Forms	2 forms for each test—A and B
Number of Items on Test	Depends on test and form; ranges from 90 to 110 items
Administration Time	40 minutes for each test
Test Purpose	Test I can be used to evaluate student achievement after a first semester physics course; Test II evaluates the second semester of physics.
Content Tested	Test I assesses mechanics. Test II measures heat, magnetism, electricity, and sound.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, Percentile
Groups	Raw Scores, Percent Correct
Target Audience	High school physics students
Copyright Date	1964 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available; price not specified
Item Type	Generally 4 alternative multiple choice; some matching items
Norms	Norms are computed on about 8100 students who have taken the test—roughly 2000 students per test and form. No information on the characteristics of the students in the norming sample are provided in the publisher's material. To determine the utility of the norms, the user should contact the publisher for characteristics by which to compare the norming sample with the students to be tested.
Reliability	Ranges from .90 to .92 using the split-half method
Validity	No information is provided by the publisher on any validity studies. The user should review the test to determine if it measures the effectiveness of the physics curriculum of the school.
Types of Reports	There are no special computer reports or report formats on which to record information about pupil or group performance. A scoring key plus summary norms tables are provided so that the user can determine the students' achievements as compared with other students' results.
Other Information	Minimal interpretive material is available.

Sequential Tests of Educational Progress

STEP III, Level I, Science

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	75 items; 25 for each of three test parts
Administration Time	20 minutes for each of three parts
Test Purpose	To determine student science achievement for the purpose of individual student assessment and program evaluation.
Content Tested	Physical Science, Biological Science, Earth Science
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Standard Scores, Percentile Bands, Stanines, Grade Level Indicators
Groups	Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Items, Normal Curve Equivalent, Domain Scores, Standard Scores
Target Audience	Students in grades 7-10
Copyright Date	1979 (Revision anticipated about every 6 years)
Cost of Specimen Set	No cost for small scale requests
Item Type	4 alternative multiple choice
Norms	The selection of the school districts that would formulate the norming sample included the consideration of the region of the country, size of community, percent of minority population, socioeconomic status, and educational status. Norms were developed based upon the testing of about 4500 students across grades 7-10. Special students such as special education students not enrolled in regular classes have been excluded from the norming sample. Special norms by grade level have been provided for each of the content areas.
Reliability	.57 to .85 depending upon test part and grade level using Kuder-Richardson Formula 20
Validity	Evidence has been collected to provide an indication of concurrent, predictive, and construct validity. Content validity can be established by the test user by matching the content tested with the curriculum.
Types of Reports	Alphabetic Roster of Scores by Class, Rank Order Score Roster, Record Label, Individual Item Analysis, Individual Student Report, Group Item Analysis, Frequency Distribution, and an Administrator's Summary can be provided.
Other Information	This test may be administered as three separate tests. Part I of the test measures biological science topics such as cellular and molecular biology, organismic biology, continuity of life, and ecology and the environment. Part II tests earth science including Earth in the universe, the changing Earth, the oceans, the atmosphere, and energy. The topics of states of matter, properties of matter, reactions, structure, energy, forces and motions, magnetism, electricity, wave motion, and light are included in the physical science part of the test—Part III. Items have been reviewed for the purpose of reducing race and sex bias. A number of products to aid in the interpretation of test results are provided by the publisher.

Sequential Tests of Educational Progress

STEP III, Level J, Biology

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	50
Administration Time	40 minutes for test administration; 10 minutes preparation
Test Purpose	The tests can be used to identify student end-of-year achievement levels, compare a student's achievement in biology to achievement in other science and mathematics areas, isolate group and individual strengths and weaknesses, group students for instruction, and compare individual pupils with nationally representative performances.
Content Tested	Cellular molecular biology, organismic biology, continuity of life, ecology and the environment
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Stanines, Local Percentile Rank
Groups	Means in Raw Score, Percent Correct, Expanded Scale Scores, Performance on Objectives, Frequency Distribution
Target Audience	Students in grades 10-12 who have taken a biology course
Copyright Date	1979 (Date of Next Revision: 1986)
Cost of Specimen Set	Small scale requests will be honored
Item Type	4 alternative multiple choice
Norms	The test was normed on a representative sample of high school students spanning the range of socioeconomic status indicators and originating from various parts of the country. Public, private, and parochial students with minority representation comprise the norming sample. Rural, urban, and suburban students are present in the norming sample.
Reliability	.88 using Kuder-Richardson Formula 20
Validity	Test was developed after examining the content typically taught in science courses across the nation. Items were written to reflect the content and were examined by a panel of reviewers for content validity. The user should examine the test contents to determine how closely the test assesses the content of the school's curriculum in science.
Types of Reports	Individual Pupil Roster, Rank Order Score Roster, Individual Item Analysis, Frequency Distribution, and an Administrator's Summary can be provided.
Other Information	Empirical midpoints for the norms are October 5 and May 10. Students excluded from the norming sample were those special education students not in regular classes, students in vocational-technical school districts, and students in special schools. Test items were reviewed by a panel for racial, sex, and ethnic bias both prior to item pretesting and final assembly. The test is accompanied by materials such as a student practice test, interpretive manuals, a technical report, and a teacher resource guide.

Sequential Tests of Educational Progress

STEP III, Level J, Chemistry

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	50
Administration Time	40 minutes
Test Purpose	To measure student understanding and knowledge of basic concepts of chemistry.
Content Tested	Basic Chemistry
Available Test Scores	
Individual Pupil	Raw Scores, National Percentile Rank, Stanines, Standard Scores
Groups	Raw Scores, Standard Scores
Target Audience	High school chemistry students
Copyright Date	1979 (Revision anticipated about every 6 years)
Cost of Specimen Set	No cost for small scale requests
Item Type	4 alternative multiple choice
Norms	Spring and fall norms are provided for this test. Factors such as urbanicity, size and type of school, socioeconomic status, educational status, and percent of minority population were considered in the selection of school districts to participate in the norming. Special groups of students were excluded from the norming.
Reliability	Not reported
Validity	To establish content validity, the test user should review the content and processes measured by the test items and compare this to the content taught in the classroom.
Types of Reports	Score Roster, Mean and Median Scores, Record Label, Rank Order Rosters, Frequency Distributions, Group Item Analysis, Individual Item Analysis, and an Administrator Summary can be provided.
Other Information	This test covers the content areas of states of matter, properties, reactions, structure, mechanics, and measuring and classifying.

Sequential Tests of Educational Progress

STEP III, Level J, Physics

Test Author(s)	Educational Testing Service
Publisher	Addison-Wesley Publishing Company
Number of Test Forms	1 form
Number of Items on Test	50
Administration Time	40 minutes administration; 10 minutes preparation
Test Purpose	The test may be used to measure end-of-course achievement in physics. Results for individuals and groups can be compared to national performance. Student and group strengths and weaknesses in physics can be determined.
Content Tested	Structure of matter, energy, mechanics, electricity and magnetism, wave motion, behavior and theory of gases
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Expanded Scale Scores, Performance on Objectives, Stanines, Local Percentile Rank
Groups	Means in Raw Scores, Percent Correct, Expanded Scale Scores, Performance on Objectives, Frequency Distribution
Target Audience	Students in grades 10-12 who have taken a physics course
Copyright Date	1979 (Date of Next Revision: 1986)
Cost of Specimen Set	Small scale requests will be honored
Item Type	4 alternative multiple choice
Norms	Norms were gathered on students originating from various socioeconomic, ethnic, racial, minority, and geographic backgrounds. Public, private and parochial students were part of the norming sample. Special education students not in regular classes were excluded from the norms, as were vocational-technical school district students. Students in urban, suburban, and rural communities were used in the norming sample.
Reliability	.78 using the Kuder-Richardson Formula 20
Validity	The test items were developed around commonly taught content in physics courses. A panel of test specialists reviewed items to assure match to the outlined content. The test user should examine test items to determine the degree of match to the school's physics curriculum.
Types of Reports	Individual Pupil Roster, Rank Order Score Roster, Individual Item Analysis, Frequency Distribution, and an Administrator's Summary can be provided.
Other Information	October 5 and May 10 are the empirical midpoints of the norming periods. Items were reviewed for racial, sex, and ethnic bias by a panel of experts both prior to pretesting the items and formulation of the final forms. Ancillary materials include a technical report, content descriptions, interpretive materials, teacher resource guide, directions for administering the test, and a student practice test.

SRA Achievement Series—Science

Level G

Test Author(s)	Robert Naslund, Louis Thorpe, D. Welty Lefever
Publisher	Science Research Associates
Number of Test Forms	2 forms—1 and 2
Number of Items on Test	40
Administration Time	About 10 minutes for directions and preparation; 30 minutes actual test time
Test Purpose	The test gives an indication of student performance in science for both individuals and groups.
Content Tested	Nine items were designed to measure student knowledge of factual information. Sixteen items are classified as measuring science concepts and principles, while 15 items relate to science processes. The test seems to emphasize the physical sciences.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Groups	Raw Scores, Percent Correct, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Target Audience	Students in grades 8-10
Copyright Date	1978 (Date of Next Revision: Not specified)
Cost of Specimen Set	Available, no price listed
Item Type	4 alternative multiple choice
Norms	Norms for this level of the test were developed through the testing of 3098 grade 7 students, 5999 grade 8 students, and 2412 grade 9 students. The sample of students was selected to be, to the extent possible, representative of the nation. About 80 percent of the schools tested in the fall were retested in the spring. The norming sample included regular and Title I schools, public and nonpublic schools, and rural and urban schools. Norming midpoints, based on empirically gathered data, occur on October 1 and April 22.
Reliability	Ranges from .77 to .83 depending on grade level using the Kuder-Richardson Formula 20
Validity	Users should examine the match between the content of this test and the school's curriculum to determine the degree of content validity. The test was designed to assess typically taught science content as determined through an examination of state and local curricula. The publisher is developing information on construct, concurrent, and predictive validity.
Types of Reports	Score Listings by Class, Group Summary Reports, Frequency Distribution, Individual Student Labels, Individual Skill Profile, Group Skill Profile, Ranked Listings, and a Group Item Analysis can be provided.
Other Information	The science test is part of a basic skills test battery. Test booklets and answer sheets are available for machine scoring. The publisher has used representatives from minority groups to review test items editorially for bias. Empirical data have also been gathered. The publisher has developed an optional capability to determine student progress longitudinally and to compare this achievement growth to the nation's. This can be performed on an individual pupil basis or for groups. A teacher's manual is available for score interpretation and use in decision-making.

SRA Achievement Series—Science

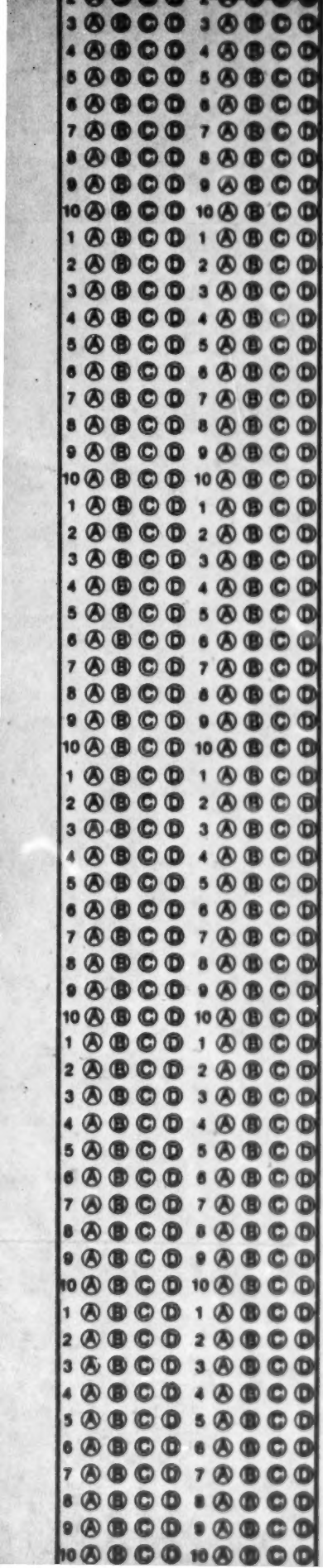
Level H

Test Author(s)	Developed in cooperation with the American Institute for Research in the Behavioral Sciences
Publisher	Science Research Associates, Inc.
Number of Test Forms	2 forms—1 and 2
Number of Items on Test	40
Administration Time	About 10 minutes for directions and preparation; 35 minutes actual testing time
Test Purpose	To describe student performance on a broad range of skills on an individual and group basis.
Content Tested	9 items test student knowledge of factual information. 23 items are classified as measuring science concepts and principles, while 8 items deal with science processes. Content emphasis is in the physical and life sciences, but items related to health and consumer topics are also included.
Available Test Scores	
Individual Pupil	Raw Scores, Percent Correct, National Percentile Rank, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Groups	Raw Scores, Percent Correct, Grade Equivalent, Normal Curve Equivalent, Expanded Scale Scores, Performance on Skills
Target Audience	Students in grades 9-12
Copyright Date	1978 (Date of Next Revison: Not specified)
Cost of Specimen Set	Available; no price listed
Item Type	4 alternative multiple choice
Norms	Norms were developed empirically twice in one school year. The midpoints are October 1 and April 22. The numbers of students used to develop the norms include 3453 grade 9 students, 3686 grade 10 students, 2799 grade 11 students, and 1698 grade 12 students. The schools were selected to be representative of the nation and include public and nonpublic schools, rural and urban schools, regular and Title I schools. Schools represent various parts of the country.
Reliability	Ranges from .83 to .87 depending upon grade level using the Kuder-Richardson Formula 20
Validity	Before the test is used for evaluative purposes, the user should examine the test to verify the match between test content and the curriculum. The test content was determined after an examination of state and local curriculum guides and teacher reviews. The publisher is gathering information on construct, concurrent, and predictive validity.
Types of Reports	Score Listings by Class, Group Summary Reports, Frequency Distribution, Individual Student Labels, Individual Skill Profile, Group Skill Profile, Ranked Listings, and a Group Item Analysis can be provided.
Other Information	The test is part of an achievement battery. Test items have been reviewed editorially by minority group representatives and statistically by test experts. An optional capability to track student progress across time is provided. Student growth can be compared to the nation on an individual pupil or group basis. An examiner's manual accompanies the test. An interpretation manual lists information on how to use the test data for planning instruction and improving the curriculum.

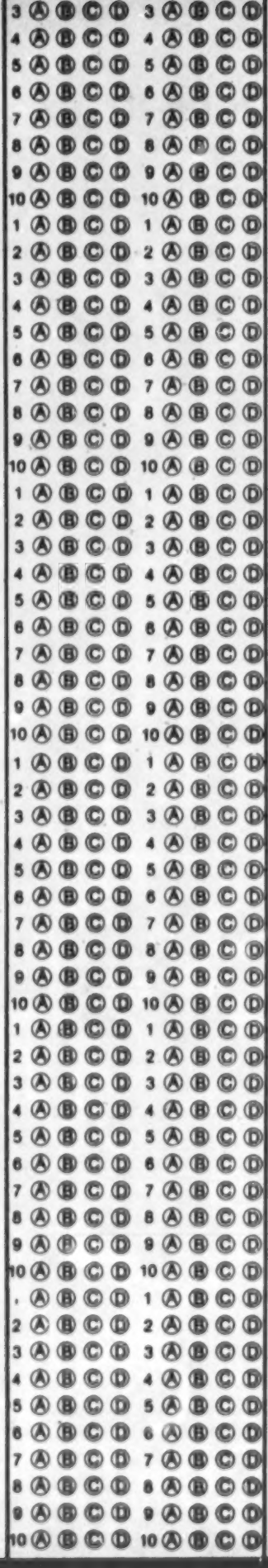
Tests of Achievement and Proficiency: Science

Multilevel Edition

Test Author(s)	Dale P. Scannell, Oscar Haugh, Alvin Schild, Gilbert Ulmer
Publisher	Riverside Publishing Company
Number of Test Forms	1 form—4 levels
Number of Items on Test	123 (60 to 63 items per level)
Administration Time	40 minutes
Test Purpose	To measure student achievement in comparison to skills and the nation sample and to track student achievement progress across time in school.
Content Tested	Nature of Science, Biology, Earth and Space Science, Physics, and Chemistry, through the skill areas of knowledge, application, explanation, and experimental methods and techniques.
Available Test Scores	
Individual Pupil	Raw Scores, Standard Scores, Grade Equivalent, Percentile Rank, Stanines, Expanded Scale Scores, Performance on Objectives
Groups	Raw Scores, Standard Scores, Grade Equivalent, Expanded Scale Scores, Performance on Objectives, School Average Percentile Rank
Target Audience	Students in grades 9-12
Copyright Date	1978 (Date of Next Revision: 1983)
Cost of Specimen Set	$6 for entire battery
Item Type	4 alternative multiple choice
Norms	Approximately 15,700 grade 9 students, 13,800 grade 10 students, 13,000 grade 11 students, and 13,900 grade 12 students comprised the norming sample for this test. School districts were selected by district size, geographic region, and community socioeconomic status. Results were weighted to reflect national percentages in the population. Norms contain students from public and private schools. Midpoints of the norming dates are October 29 and April 21. Midyear norms are available but interpolated.
Reliability	.89 to .91 using Kuder-Richardson Formula 20
Validity	Test items were written to conform to typical content and practices in science at the grade levels outlined for this test. Test items were reviewed by the authors and an independent panel prior to final inclusion in the test. Test scores have been correlated with the Iowa Test of Basic Skills and with student grade point averages to add additional validity data.
Types of Reports	A variety of report generation packages are available to the user. Among the options are student or group performance by skills, student labels, student rankings, group average, narrative descriptions of individual or group performance, alphabetical listings by grade, punched cards, magnetic tapes, frequency distribution, plus several others.
Other Information	Depending upon student ability, the teacher can assign one of four starting and ending points in the test, thereby somewhat tailoring the test to a particular student's capabilities. This option provides for both in-level and out-of-level testing and the ability to convert out-of-level to in-level scores. A manual that accompanies the test package contains information for improving the curriculum and instruction for science as well as for subjects covered by the other tests within this battery. Test items have undergone editorial and statistical review for the purpose of reducing racial, sex, and ethnic bias. Special norms can be provided on request and include norms for the local school district and large city schools.



Miscellaneous Science Tests



Science Tests In Braille

*Cooperative Sequential Tests of Educational Progress, 1957
Form 2B, 3B and 4B

*Stanford Achievement Tests: Forms A and B, 1972
Primary, Intermediate and Advanced Levels

Science Tests In Large Type

*Cooperative Sequential Tests of Educational Progress, 1957
Form 2B, 3B and 4B

*Stanford Achievement Tests: Forms A and B, 1972
Primary, Intermediate and Advanced Levels

**Comprehensive Tests of Basic Skills: Forms Q and S, 1968
Levels 1, 2, 3, and 4

**Iowa Tests of Basic Skills: Forms 3, 4, 5 and 6, 1964

**Metropolitan Achievement Tests: Form F, 1970
Primary I, II, Elementary, Intermediate and Advanced Levels

**Sequential Tests of Educational Progress: Form 4A, 1969

**Stanford Achievement Tests: Form W, 1964
Primary and High School Levels

*Comes complete with answer sheets, scoring keys, directions, etc.
**Only the student test booklet is available.

These tests are available from American Printing House for the Blind, 1839 Frankfort Avenue, PO Box 6085, Louisville, KY 40206. Phone: (502) 895-2405.

Item Banks with Science Items

Over the past few years, a number of public and private concerns have developed banks of test items. Generally, the purpose of such an endeavor was to have the capability of generating several tests with uses ranging from classroom testing of instructional units to comprehensive program evaluation.

Though most item banks focus on reading, English/language arts, and mathematics, a few do contain science items. Item banks with science items are briefly described for the reader. The material provided was largely drawn from a publication by Michael Hiscox and Evelyn Brzezinski titled, *A Guide to Item Banking in Education*, published by Northwest Regional Educational Laboratory, Portland, Oregon.

NAME: Achievement Test Item—Data Bank

CONTACT: Principal Research Investigator
The Psychological Corporation
757 Third Ave.
New York, New York 10017
(212) 888-3331

DESCRIPTION: This item bank contains items related to objectives in several content areas including science. The items are appropriate for grades K-12. Test items have undergone a series of reviews for content validity, clarity, bias, and technical quality. Items are selected for test construction after the user determines the objectives to be tested.

NAME: Computer-Generated Chemistry Exam Questions

CONTACT: K. Jeffrey Johnson
Associate Professor
University of Pittsburgh
Department of Chemistry
Pittsburgh, Pennsylvania 15260
(412) 624-5114

DESCRIPTION: Items within this bank were developed by teachers and have been edited for clarity and have undergone informal pilot testing. Items can be made available free or for the cost of reproduction. The test item developer can provide such services as printing of tests, scoring, report generation, and assistance in interpreting test data. About 400 items appropriate for grade levels K-12, college students, and adults can be utilized.

NAME: Instructional Objectives Exchange

CONTACT: Elaine L. Lindheim
Director of Test Development
Instructional Objectives Exchange
10884 Santa Monica Blvd., Suite 305
Los Angeles, California 90025
(213) 474-4531

DESCRIPTION: About 450 sample items are available to assess 309 objectives in the natural sciences. Test items span the grade levels of K-12 and have been developed by a variety of persons including teachers and testing specialists. The bank is available for sale.

NAME: Multnomah County ESD Computerized Item Bank

CONTACT: Peter Wolmut
Director, Evaluation and Research
Multnomah County ESD
PO Box 16657
Portland, Oregon 97216
(503) 255-1841

DESCRIPTION: About 60 test items for grades 3-12 are part of this item bank. Items have been developed by a variety of sources including teachers within the school system and outside contractors. Some technical information has been gathered on the items. Items would probably be limited for use within the school district or the state of Oregon.

NAME: National Assessment of Educational Progress

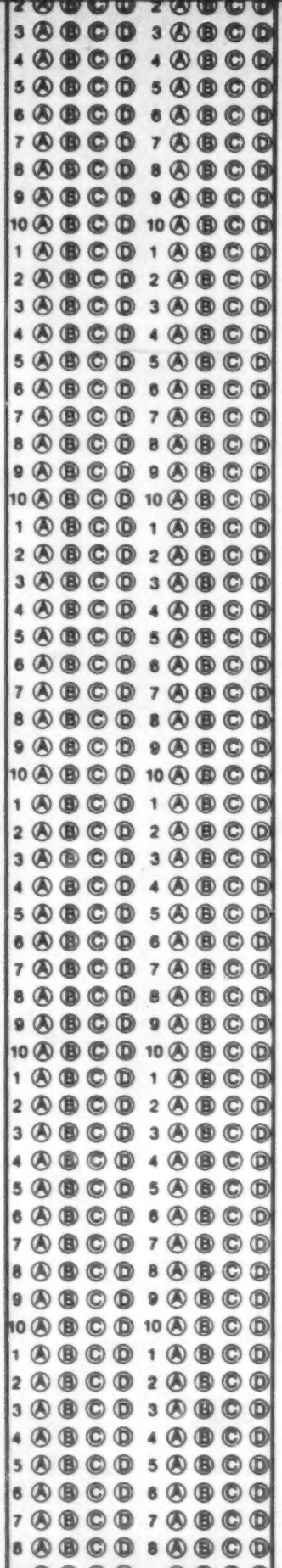
CONTACT: Jack Schmidt
Department of User Services
National Assessment of Educational Progress
1860 Lincoln St., Suite 700
Denver, Colorado 80295
(303) 830-3740

DESCRIPTION: National Assessment of Educational Progress (NAEP) has a bank of nearly 600 science items related to nine goal areas in science. Items have undergone extensive editorial and technical reviews. Items have been piloted and are available upon request. The items are applicable to students of ages 9, 13, and 17. Test items measuring concepts in energy may also be obtained from NAEP. Printing of test items, scoring services, and report generation are not available from NAEP.

NAME: None given

CONTACT: Dr. James E. Embree
Director, Curriculum Research
Clark County School District
2832 E. Flamingo Rd.
Las Vegas, Nevada 89121
(702) 736-5409

DESCRIPTION: Over 350 biology items for high school students form a part of this item bank. Items were written by teachers and have undergone informal pilot testing. Items are available free or for the cost of reproduction. No printing, scoring, or report generation is available with the bank.



NAME: None given

CONTACT: Dr. Edward D. Roeber
Supervisor, MEAP
Michigan Department of Education
PO Box 30008
Lansing, Michigan 48909
(517) 373-8393

DESCRIPTION: About 500 science items are available for students up through grade 9. These items measure about 80 skills or objectives. The items have undergone informal pilot testing and have been edited for clarity, technical quality, and bias. Associated with the item bank are various instructional activities, codings to instructional materials, and technical reports. Arrangements can be made for printing, scoring, and reporting. The user can also utilize various training services related to test data interpretation, item writing, writing objectives, and test administration procedures.

NAME: None given

CONTACT: Dr. William P. Gorth
President
National Evaluation Systems, Inc.
30 Gatehouse Rd.
Amherst, Massachusetts 01002
(413) 256-0444

DESCRIPTION: National Evaluation Systems has approximately 1500 test items covering science topics applicable to students in grades K-12. Items were written by teachers and testing specialists. The science items were reviewed for content accuracy, technical quality, and bias. Items are available for sale by contacting the testing company. The company can also provide printing, scoring, report generation, and data interpretation services.

Addresses of Test Publishers

Addison-Wesley Testing Service
South St.
Reading, Massachusetts 01867

American Chemical Society
University of South Florida
Examinations Committee
Chemistry Room 112
Tampa, Florida 33620

Bureau of Educational Measurements
Emporia State University
1200 Commercial
Emporia, Kansas 66801

CTB/McGraw-Hill
Del Monte Research Park
Monterey, California 93940

The Psychological Corporation
757 Third Ave.
New York, New York 10017

Riverside Publishing Company
Test Department
P.O. Box 1970
Iowa City, Iowa 52244

Scholastic Testing Service, Inc.
480 Meyer Rd.
Bensenville, Illinois 60106

Science Research Associates, Inc.
155 North Wacker Dr.
Chicago, Illinois 60606